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Editorial Chats



Organising the Apple Industry.

WHAT IS THE BEST method of organising Apple Growers in Australia?

The answer will be found in the creation of fruit marketing associations in the several States and their co-ordination in an Australian organisation. Success has attended the operations of the Apple Sales Board (voluntary) in Western Australia; the "Victoria Mark" Fruit Co. has been launched in Victoria, under happy circumstances. Fruit marketing associations elsewhere in Australia and other parts of the world all point the way to success.

Briefly, the idea would be (1) Grade to standards for the Australian markets; (2) Advertise to increase fruit consumption, and (3) utilise the poorer grade Apples in fruit drinks, fruit pies and by-products. Finance should be provided by a small levy per case.

The grading and packing to standard would give much-needed confidence to the trade and the public; advertising would unquestionably increase the consumption of Apples, and both N.S.W. and Victoria have proved that a most palatable drink can be made from crushed Apples.

The recent discussions at Tasmanian Fruitgrowers' Conferences reveal the need for unity and organisation from both the State and Australian viewpoints.

What a pitiable mistake it is for fruit to be sent in a hap-hazard manner to Interstate markets. All the main markets of the Commonwealth are at times clogged with poor quality fruit, which should never leave the orchard. The grower suffers every time. Every line of commerce is graded, and sold under brands: Why not fruit?

Growers have this matter in their own hands, and the solution is easy. The National Mark has operated successfully in England, so has the Dominion Mark in New Zealand. The Victoria Mark is being established in that State. It is a State-wide guarantee as to quality. The packing and grading of fruit to standards and the advertising should double the consumption.

The foregoing facts are real, and their adoption would lift the industry into prosperity, and it need not be postponed.

The "Fruit World" will gladly stand behind an Australian-wide programme along the lines indicated. Each State to set up its own fruit marketing or-

ganisation, which could be co-ordinated into an Australian-wide one. Statistics and crop reports would be available, local and Interstate markets could be regulated.

Australians are not lacking in ability to put into practice what has been accomplished elsewhere.

The Victoria Fruit Mark System is now getting under way. It was decided to launch this in the form of a company, rather than as an unregistered association. It is in reality an association of growers, wholesalers and retailers with legal status.

All interested are invited to obtain a copy of the prospectus from the Secretary, Box 1944, G.P.O., Melbourne.

Apple and Pear Export.

VITAL MATTERS affecting the Apple and Pear export industry are included in the reports so far furnished by Mr. G. W. Brown, Australian delegate to the Empire Producers' Conference. Details are given in previous and the present issues of the "Fruit World." Some of the changes advocated by Mr. Brown have been considered by the industry for years past, i.e., color grading, uniform grade designations, "Extra Fancy" and "Fancy," but, with the powers now possessed by the Council, these matters can be finalised.

That fruit export must be viewed from an Empire viewpoint appears to be inevitable. The foundations for the present proposals were laid at Ottawa. The recent London Conference was the logical outcome, and there appears to be the further necessity of having an Australian representative in London to co-ordinate these items and to attend to matters of high policy. Other countries—Canada, South Africa, New Zealand, U.S.A., etc.—find it to their advantage to have their direct representative available at this the most important of our export markets. The matter of finance comes in, of course, but the expense incurred would be saved many times over. The size and importance of the Australian Apple and Pear export industry would appear to justify this procedure. Specific and expert attention needs to be given to national and international matters of policy affecting the industry, attention to claims, expert reports on shipments, freight reduction, etc.

Careful consideration will be given to all the matters dealt with at the Empire Producers' Conference, in particular, the co-operation with British and Dominion producers for mutually sharing the British markets. Just how the matter of co-ordinated arrivals is to be dealt with remains to be seen. It is the stiffest problem at the moment.

The Australian Apple and Pear Export Council is to be warmly congratulated on its achievements to date. From its modest beginnings in 1931 the organisation has assumed paramount importance in three years. This is all

to the good. Growers now have power they never possessed before in shaping the policy of the industry. It is pleasing to see that far-seeing and capable growers are deputed by their fellow orchardists to attend to vital matters to stabilise and develop the industry.

PERSONAL.

Capt. W. J. Wade, the well-known Australian representative of the Port of Manchester recently returned from a trip to Queensland. Capt. Wade has not been in the best of health for some time, and the trip north was part business and part a health trip.

Mr. A. T. Booth, the popular secretary of the West Australian Fruitgrowers' Association, recently underwent an operation, from which he has satisfactorily recovered. However, it was deemed wise that Mr. Booth should not risk the strain of the long journey from W.A. to Sydney, and in consequence he did not submit his name as a delegate to the forthcoming Australian Apple and Pear Export Council Conference.

Mr. and Mrs. John Tully, of Doncaster, celebrated their golden wedding on October 2. Mr. Tully is a prominent fruit-grower. He was once sent to England as a delegate from the Victorian Fruitgrowers' Central Association to report on market improvements.

Mr. and Mrs. Anton Lenne, of Ardmona, have just returned from their visit abroad.

Mr. G. W. Peart (Goodman's Nurseries, Bairnsdale, Vic.) has been re-elected president of the Nurserymen and Seedsmen's Association of Victoria.

Mr. G. L. Sutton, Director of Agriculture, Western Australia, was in Melbourne at the end of September.

OBITUARY.

Sympathy is extended to Mr. and Mrs. Frank Petty, of Mitcham, Victoria, in the loss of their son, Vernon, aged 16. The lad contracted pneumonic influenza in a severe form, which rapidly proved fatal.

It is with regret that we announce the death of Mr. Edward Pritchard, who passed away at Harcourt on September 22. Mr. Pritchard gave unlimited time to public matters, and his place in public matters in the Harcourt district will be hard to fill.

He was a member of the Metcalfe Shire Council for 26 years, being President of the shire on many occasions. He was also a Justice of the Peace.

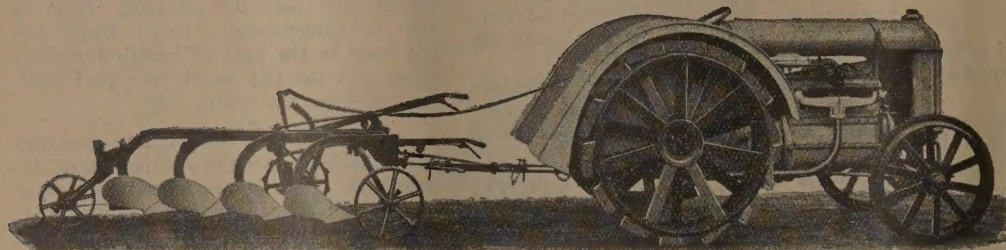
Mr. Pritchard was a leading Harcourt orchardist, and gave valuable services as a director of the Harcourt Cool Stores and the Harcourt Fruitgrowers' Association.

A widow and a grown-up family, comprising Mrs. J. B. Mills (Melbourne), Mrs. L. D. Jones, Mrs. Hankinson, Mrs. J. H. Ely (Harcourt), and Mr. J. G.

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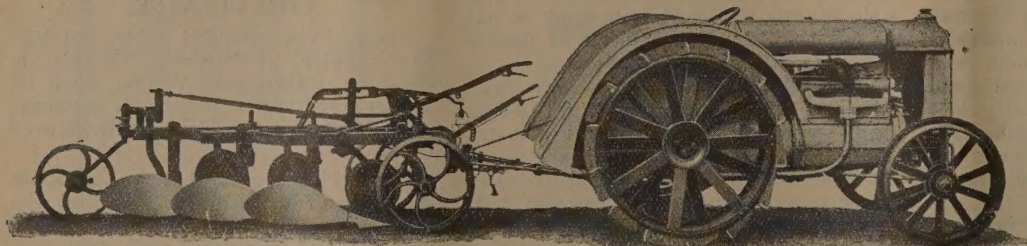
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Pritchard (Harcourt), are left to mourn their loss.

The funeral was one of the largest ever seen in the district. The casket was covered with wreaths and flowers from all sections of the community. The bearers at the house were Messrs. Frank Pritchard (brother), J. B. Mills, H. Jackson, L. D. Jones (sons-in-law), H. Crome and J. S. Gartside (brother-in-law), and the bearers at the cemetery were Senator Sir Harry Lawson, J. H. Jenkin (Bendigo District Cricket Association), G. Douglas (Harcourt Fruit-growers), J. H. Lang (Harcourt Cool Stores), W. E. James (Porcupine Irrigation Committee), H. M. McLean (Harcourt Cricket Club), W. L. Williams (Harcourt I.O.R.), and Cr. J. B. Warren.

News in Brief.

After trying the several methods of fruit selling in Perth, growers and distributors are agreed that the best method is that of auction and this system has accordingly been adopted.

Western Australia favors certain alterations to Apple and Pear export grading regulations. Details included in report of W.A. Fruitgrowers' conference.

Tests show that Cherries will keep satisfactorily in cold store at 33 degrees F. for 35 days. The Cherries should be kept in a post-cooler for 24 hours before being placed on the market.

By quick freezing and holding at 15 deg. Fah., Cherries will keep in good order indefinitely. On being thawed they must be used immediately.

The approximate blossoming dates of Apples, Pears and Cherries in Victoria are given in this issue.

Granny Smith Apples are being freely planted on the Murrumbidgee Irrigation Areas, as they thrive, and bear particularly well, and come in several weeks earlier than other districts. A good future for this variety is forecast.

AUSTRALIAN DRIED FRUITS.

Sales in Great Britain.

The Commonwealth Dried Fruits Export Control Board advise that during the week ended September 27, 1,354 tons of Australian dried fruits were sold in Great Britain.

Included in the figures returned to the London agency were 1,130 tons Sultananas at an average price of £38/13/3, 68 tons Currants at £32/5/9, and 156 tons Lexias at £37/15/7 per ton.

The quantity of Currants unsold and now in store or afloat stands at the remarkably low figure of 1,747 tons.

The market is expected to take further interest in the Sultananas, of which 20,074 tons have been shipped from the present harvest.

Australian Apple and Pear Export Council.

Annual Conference, Sydney, Oct. 8-11.

Important Matters to be Discussed.

THE ANNUAL CONFERENCE of the Australian Apple and Pear Export Council, to be held at the Assembly Hall, Margaret-street, Sydney, from October 8-11, promises to be the most eventful and epoch-marking in the history of the industry.

The Conference will be officially opened by the Minister for Commerce (Hon. F. H. Stewart), on Tuesday, October 9, at 2 p.m.

Among the items on the agenda paper are the following:—Report by Mr. G. W. Brown re Empire Producers' Conference and Fruit Exports Generally; Maturity of Apples for Export; Regulated Arrivals in U.K. and the Continent; Trade with Continent; Tariffs, Quotas, etc.; Reduction of Freight;

(2) Apples and Pears are considered to be by far the most difficult cargo to carry. The pre-shipment history of the commodity is often unknown to the shipowners, and the percentage of claims is greater than any other refrigerated produce.

(3) The uncertainty of the completion of contracts owing to the "force majeure" clause is greater with Apples and Pears than with any other commodity.

(4) The fact that it was clearly understood originally that the £125,000 set aside by the Federal Government was in lieu of a freight reduction on fruit.

These were factors which had so far operated against the securing of freight

Apples.

State.	1934	1933.	
	Forecast Shipments.	Actual Shipments.	Actual Shipments.
N.S.W.	120,000	88,682	325,886
Victoria	780,000	719,520	1,445,462
Queensland	37,000	41,580	19,144
Sth. Australia	521,000	543,155	253,126
West Australia	600,000	605,103	571,617
Tasmania	2,750,000	2,990,493	3,238,619
	4,808,000	4,988,533	5,853,854

Apples as Non-Refrigerated Cargo; Standard Temperatures for Apples and Pears; Review of Varieties for Export; Export Grading Regulations and Uniform Empire Nomenclature; Designations Extra Fancy and Fancy instead of Special and Standard; Uniform Inspection, Interchange of Inspectors or Appointment of Co-ordinating Officer; Trade with the East; Canada and New Zealand Fireblight Question; Compensation for Growers in Reworking Fruit Trees, etc.

THE ANNUAL REPORT of the Australian Apple and Pear Export Council deals comprehensively with the valuable work which has been performed since the last conference met at Sydney in November, 1933.

The report deals with the negotiations with New Zealand regarding mutual reduction of exports. The President (Mr. J. B. Mills) reported that—

(1) The Australian Apple and Pear exporters had so far failed to agree on a uniform type of package.

reduction. Regarding space allocation, the figures on this page show the 1934 forecasts, together with actual exports in 1934, also the exports in 1933 as follows:—

Pears.

	1934.	1933.
	(Cases.)	(Cases.)
N.S.W.	25,947	45,420
Victoria	223,842	409,622
Queensland	180	117
Sth. Australia	31,040	14,702
West Aust.	33,787	52,244
Tasmania	76,843	163,134
	391,639	685,239

The Apple Gift Scheme was carried through successfully. Other matters which have claimed attention include Insurance and Collection of Claims, Uniform Inspection, Standard Apple Purchase Contract Form, Concentrated Apple Juice and Advertising Australian Apples in U.K.

VICTORIA

Among the Orchards

The Pakenham District.

DURING SEPTEMBER a representative of the "Fruit World" visited the Pakenham district and called on many growers.

Mr. G. T. Brown, of Pakenham East, has a nine-acre orchard on a loamy flat growing Jonathans and Yates, with a sprinkling of Granny Smiths. Mr. Brown has carried out some interesting experiments on codlin moth control. He applies four separate sprays before Christmas in the following order: (a) arsenate spray, 1 in 20, at the calyx stage; (b) arsenate spray a fortnight later; (c) one white oil, 1 in 80, and (d) one arsenate, 1 in 20. Then follows: One oil spray, 1-80, every three weeks after Christmas until harvesting. With this spray he finds the control very

during autumn. Mr. Brown recommends the following procedure:—Examine once a week until the winter and destroy all grubs. Scrape the trees about July. Look at the bandages a few days later to catch grubs that fall with the scraping on to the ground. Then, after each rain, examine the bandages again and some codlin moth grubs will be found in the bandages again. Then examine the bandages finally just before the end of September.

Mr. A. Sapwell, of Pakenham East has a nice 32 acre orchard of sandy loam on an easterly slope containing mixed varieties for the local trade. Mr. Sapwell has found that animal manure is the best for his district, scraping from the piggeries giving wonderful results. This manure is broadcast over the ground and ploughed under in the early spring. Mr. Sapwell stresses the necessity for drainage. He had a system of three inch pipes leading into a four inch main.



Mr. W. H. Grant, Kiewa Valley (holding limb) and discussing new grafting method with Messrs. W. E. Grant, J. C. Hague and P. Val Kerr.

efficient. Although the oil takes the bloom off the Apple, the bloom comes through again and leaves the Apple in quite good condition. The residue of arsenate on the Apple did not require wiping.

Interesting experiments were conducted with the oil and arsenate sprays after Christmas, thus:—The first block was given 1 in 80 white oil three weeks before harvesting,—result: one half case infected to every 200 cases harvested; 2nd block,—1 quart of white oil to 80 galls. of water, plus 3 lbs. of arsenate to the 80 galls,—result, 20 cases infected out of 200 cases; 3rd block,—3 lbs. of arsenate to 80 galls. of water,—50 cases infected out of 200. The oil No. 1 block needed no washing or wiping for residue.

Bandaging for Codlin Moth Control.—The bandages are tied around the trees

This empties into a large dam from which the water is pumped up to a catchment area at the top: irrigation is by gravitation. There are three miles of pipes in this orchard.

During September, Mr. Sapwell is very busy sterilising all boxes for the control of codlin larvae. He stresses that this is very important in the control of codlin. His method is to sterilise the boxes for approximately three minutes in boiling water. This is a congenial occupation for a wet day.

A call was also made at the 30-acre orchard of Mr. Sam. Brown, who has a well conducted property. Mr. Brown takes a keen interest in all matters relating to district improvements. He is one of the regular pruners at the field day demonstrations.

Mr. Brown has faith in the future of the Pear industry, and is at present

showing this by planting five acres of Pears—Packhams, B. Bosc, Winter Nelis and Josephine.

Mr. F. Kennedy, whose orchard was also visited, has been very observant regarding stocks for Apple trees. He doubts the value of the Northern Spy as a general purpose stock for Apples.

Other growers visited were:—L. A. Fraser, Army-road, Pakenham East; P. O'Halloran, Gembrook-road, Pakenham; W. McLean, Gembrook-road, Pakenham; A. Jeremiah, Gembrook-road, Pakenham; J. A. Walden, Gembrook-road, Pakenham; S. Schreuder (34 Maling-road, Canterbury); W. Close, Pakenham East; E. Cook, Pakenham East; A. Heine, Pakenham; A. Dunning, Pakenham; T. Fuller, Pakenham.

Mr. J. Sestak, of Pakenham Upper, has ten acres of orchard of gray loam soil. The Apple varieties include Jonathan, Delicious, Romes, Five Crowns. Mr. Sestak has had great success with the N.Z. Blue Lupin as a cover crop. During September he was busy ploughing in a prolific crop three feet high. Although some find the N.Z. Blue Lupin very difficult to grow, Mr. Sestak has solved the problem by using acclimatised seed. He noted that in the first season after sowing, only 33 per cent. of the seeds germinated. Seeds taken from these plants, however, germinated up to 100 per cent. The sowing rate is three-quarters of a bushel to the acre with one cwt. of superphosphate manure. There are several beehives throughout the orchard.

Mr. W. R. A. Bastow has 28 acres of orchard on granitic and grey loam soil. The orchard is on an easterly slope. Mr. Bastow considers that the jays are at present his best friends: he notices them busy pulling all the rough bark off the trees, and he considers that there is only one object, and that is to eat the grubs.

Messrs. Parish Bros., Warragul, have 39 acres of Apples—Jonathans, Yates, Rokewood, also Granny Smith grafted on to Yates. Parish Bros. consider that peas as a cover crop are equal to 3 cwt. of nitrogen manure to the acre per season. They have some prolific Yates trees, 50 of which yielded 500 cases of well-grown fruit last season. They consider the tongue graft the most successful of all methods. Several Granny Smith grafts, worked in September, 1933, yielded two bushels of Apples in autumn, 1934, and before pruning this season showed four feet of growth on the leaders.

Mr. J. Lark's orchard at Pakenham Upper, is on undulating country, the main Apple varieties being Jonathan, Lalla, Rokewood and Yates. Although Mr. Lark does very well with Rokewood, he has difficulty with obtaining a crop of Lallas, and would like to hear of any



Growers discussing Plug Grafting at J. B. Smith & Son's Orchard, Harcourt, Vic.
Left to right: Messrs. J. Brock, G. Douglas, W. Quirk, F. Ford and G. Seaton.

hints on methods to obtain a crop from readers. His orchard covers eight acres and the soil is grey loam.

On the 12 acre orchard of Mr. A. Dunning, Jonathans, Yates, Delicious and Granny Smith are specialised. The soil is grey loam. Mr. Dunning has found that putting fowl manure on the Yates in February gave a wonderful response. As illustrating the difficulty of cultivating last season—on February 12 his ground was too hard to plough, although covered with a prolific crop of cape weed.

Field Day at Vermont

There was a large attendance at Mr. F. G. Beet's orchard, at Vermont, on September 20, when demonstrations on the re-working of fruit trees were given by Messrs. F. J. Greatorex and F. V. Roberts, Orchard Supervisors, Department of Agriculture.

There was also a demonstration of the Howard Rotary Hoe, which created much interest.

In the evening, at the East Burwood Hall, Mr. E. E. Pescott, F.L.S., Senior Horticultural Instructor, gave a valued illustrated lantern lecture showing methods of re-working fruit trees. Mr. G. Mock presided.

Appreciation was expressed for the information given concerning the operations of the Victoria Mark Fruit Company.

Somerville.—Mr. Norman Unthank has purchased J. Byrne's orchard. The previous manager, Mr. T. G. Tyler, has moved to his property at Mt. Eliza, near Frankston.

Shepparton.—Present crop prospects show that Apricots are likely to be patchy, Trevatt fair, Moorpark light; Plums also appear to be patchy. Peaches good, canning Pears medium; the late Pears appear to be better than canning Pears.

Lemnos.—A flower show will be held at Lemnos, near Shepparton, on October 10. The secretary is Mr. J. Teasdale.

Victoria Mark Fruit Company

SATISFACTORY PROGRESS is being made in Victoria in launching the Victoria Mark Fruit Company Ltd. This is an organisation of fruit-growers, wholesalers and retailers to standardise and advertise fruit. For ease of administration, it was established in the form of a limited company. There are to be seven directors—four growers, two wholesalers, one retailer, also an advisory committee of fifteen, consisting of growers from all parts of the State. The prospectus is now being prepared, and copies are available from the secretary pro. tem., Mr. R. E. Boardman, Box 1944, G.P.O., Melbourne.

During September there were large meetings of growers at East Burwood (Mr. George Mock presiding), at Harcourt (Mr. J. H. Lang presiding), Croydon (Mr. A. C. Chandler presiding), and at Pantom Hills (chairman Mr. S. A. Cracknell). Full details were given by Messrs. W. A. Thiele, F. Cave, C. J. Parnham, G. McDonald, and R. E. Boardman. Shares are being freely taken up.

Briefly, the idea is that fruit which is packed either at orchards or packing houses, according to defined standards, shall be entitled to have on the case a label denoting the "Victoria Mark"

quality; export standards have been adopted. This fruit will be available for local, Interstate and export markets, revenue to be provided by means of a small levy per case. Fruit of the Victoria Mark standard should sell at a premium. The levy will provide sufficient money for advertising to increase fruit consumption. Encouragement is being given for the utilisation of poor grade fruits in fruit drinks, fruit pies and by-products.

INTEREST IN SOUTH AUSTRALIA.

When on a visit to Adelaide recently, Mr. F. Cave addressed a meeting of growers, convened by the South Australian Fruitgrowers' and Market Gardeners' Association, giving details of the progress of the "Victoria Mark" movement in Victoria. Mr. Staniford presided. Mr. Cave was thanked for his address.

During the meeting it was disclosed that no regulations existed in South Australia to prevent inferior fruit being offered for sale.

BROADCASTING.

"The Late Valencia Orange in Victoria," forms the subject of a broadcast talk by Mr. J. L. Provan, B.Agr.Sc., Victorian Department of Agriculture, on October 23, from 6.15 to 6.30 p.m., over 3AR, Melbourne.

On November 6, Mr. E. E. Pescott, Senior Horticultural Instructor, will speak on Nut Growing in Victoria, from 3AR at 6.15 p.m.

APPLE RED STATESMAN.

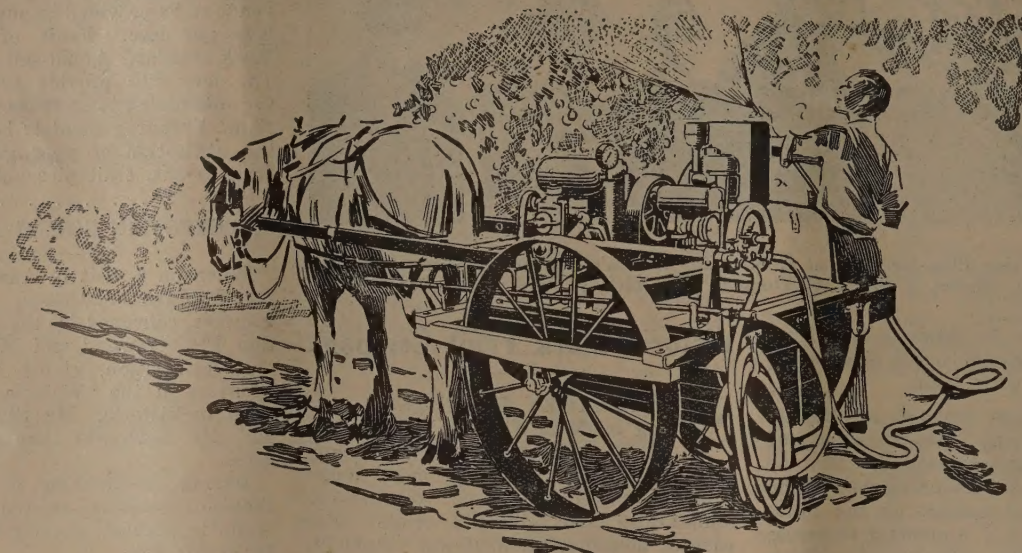
Originated as a Sport.

With regard to the paragraph in September "Fruit World," mentioning the Apple, Red Statesman, Mr. T. W. Brunning, Somerville, writes:—

Mr. H. R. Chandler, of The Basin, Victoria, informed me at the last Cool



Messrs. J. M. Smith, W. Eagle (President, Harcourt Field Day Committee), and Mr. J. Smith, at whose orchard the re-working demonstrations were carried out.



ORCHARDISTS— *Here is your Best Investment*

THE latest model Spraying Plant, built by Ronaldson-Tippett, should be part of every orchardist's assets. The Plant is moderate in price and its upkeep costs are low. The initial cost is soon repaid in more and better fruit.

Many entirely new features of construction are embodied in the Ronaldson-Tippett Spraying Plant, and every machine is guaranteed to give year-in-year-out service. With a Ronaldson-Tippett Spraying Plant in your orchard, pests and diseases are soon wiped out. The forceful flow of high pressure spray never falters. It reaches every leaf on every branch.

There is a Ronaldson-Tippett Spraying Plant to suit any orchard from 3 to 300 acres. One of the 10 different models will meet your needs exactly.

NOTE: In the above illustration one of the sturdy mudguards has been removed, to show constructional details.

Small Plants at £47/10/-

RONALDSON - TIPPETT SPRAYING PLANTS

RONALDSON BROS. & TIPPETT PTY. LTD., Builders of Internal Combustion Engines for 30 Years.
Largest Manufacturers of Engines in the Southern Hemisphere. Correspondence to Head Office and
Works: 144 CRESWICK ROAD, BALLARAT.

Melbourne Showrooms: 628 Bourke St. Sole Representatives in N.S.W.: Alfa-Laval Separator Co. Ltd.,
299 Sussex Street, Sydney.

BUY THE RIGHT MACHINE FIRST

Store Conference that Red Statesman originated from a spur on ordinary Statesman, and the first finding of it was the red Apples, but that season the Apples were picked, but they couldn't trace the spur. Next year they got it, and pruned the spur to make wood, which eventually did grow, and from that spur Red Statesman originated.

THE VICTORIAN FRUIT MARKETING ASSOCIATION.

The annual report of the Victorian Fruit Marketing Association, which was adopted at the annual meeting, held at Melbourne on September 28, included a Review of the Apple and Pear Export Council Meeting, Amendments to Constitution, Fruit for Intermediate Ports Between Colombo and Marseilles, Fruit-growers' Relief Grant, Re-working Fruit Trees, Local Fruit Marketing and the launching of the Victoria Mark Fruit Company, Improved Stowage on Steamers, Remission of Sales Tax on Wrapping Paper, Activities of the Research Committee. Regarding Agents' Liability, counsel's opinion is quoted stating that overseas firms were responsible for the due payment to growers, despite the failure of any firm or agent in Australia representing such overseas firm.

With regard to Shipping Companies' Liability, a report was tendered detailing a legal action in Great Britain, whereby a shipping company was held to be liable for damage to fruit in transit.

SCHOOLBOY HOWLERS.

Q. What does a bat do in winter time?
A. It splits if you don't oil it.

Q. What carriage is most popular in Japan?
A. Jigsaws.

Q. What is the Royal Mint?
A. Something that grows in the king's garden.

Q. What was the chief provision of the Magna Charta?
A. To prevent men from being hanged twice for one offence.

Q. What is the Tropic of Cancer?
A. A painful disease.

Q. What headgear is used most in India?
A. Turbines.

Q. What is feminine of heir?
A. Rabbit.

Q. What is an octopus?
A. A person that hopes for the best.



Mr. J. Thomlinson (Harcourt District Orchard Supervisor) painting tree trunks with special preparation after inserting plug and bark grafts.

TASMANIA.

THE recent fruitgrowers' conferences at Hobart and Launceston, Tasmania, were largely attended.

A majority at both conferences agreed to a Bill for compulsory voting to elect a board to replace the present State Fruit Advisory Board. The debates were keen, and the decisions by no means unanimous.

At Hobart, a resolution was carried favoring a plebiscite of growers three months after the passing of the Bill, as to whether the Act should be enforced. The Launceston conference reversed this decision. The joint votes of both Launceston and Hobart conferences defeated the proposal. There was considerable unfavorable comment on the system of counting the votes.

Growers also expressed dissatisfaction at the fact that the proposal for a compulsory organisation was submitted direct by one section to the Government prior to consideration by the Advisory Board.

Appreciation was expressed for the services of the members of the board in the fulfilment of their duties.

Other items dealt with included that of finance from the Australian Apple and Pear Export Council, a resolution being carried in favor of a more equitable distribution of funds.

It was decided to seek a minimum f.o.b. price, freight reductions, the sending of plain grade to Interstate markets, also that the minimum sizes for dessert Apples for overseas be 2½ inches, and for all culinary 2¾ inches, and that C.O.P. be allowed to ship at 2 inches, further, that there be no further elimination of varieties for export without thorough investigation, and a two-year notification to growers.

TASMANIAN FRUIT BILL.

It is understood that the Fruit Organisation Bill, which is being prepared in Tasmania, provides for the establishment of a State Fruit Board for the regulation and encouragement of the industry. The Board to consist of ten persons, the Minister for Agriculture being chairman. Elected members to hold office for three years. At the expiration of each year three of the members to retire. The State to be divided into nine districts, each to elect one member.

No person who is a director of any trading or fruit shipping company shall be eligible. A director of a co-operative company, however, whose principal object is packing fruit for its shareholders, is eligible.

A penalty of £10 is provided for any grower who fails to register within two months. Each grower to pay 2/- per acre orchard tax.

The proposed Bill gives power to the Board to make regulations governing the shipment of fruit to the other States. The Bill also sets out that it shall be the duty of the Board to advise the Minister on all matters relating to the production and marketing of fruit, and the Board may recommend regulations for pest control.

So far, the Bill is only in draft form.

WOOD WOOL

Finest Grade for Export Fruit.

STRAWBERRY BOXES.
and Fruit Containers.

Prices and Particulars on Application to

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175 Kent Street, Richmond, Vic.
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Spraying Fruit Trees.

LEAD ARSENATES: LIME SULPHUR.

Views of Dr. Cunningham.

With regard to fruit tree sprays, Dr. G. H. Cunningham, mycologist, Plant Research Station, Palmerston North, N.Z., writes to the "Fruit World" as follows:—

We have ascertained that particles in excess of 10 microns (1/2500 in) are practically worthless, as (1) they cannot be ingested by the smallest larvae, and (2) frequently fail to remain on the tree following application.

It is customary to set up standards for spray products, and such exist for most of the States in the United States of America, Britain and many other countries. We have gone into this matter most fully, and now hold the opinion that standards are unsatisfactory, our reasons being:—

- (1) A standard is usually set fairly low to enable the products of most manufacturers to comply with it.
- (2) Administration is difficult, if the standard is fairly high, as the process of manufacture frequently leads to variations in each batch of the product.
- (3) Many products change in physical and/or chemical composition with keeping, consequently, a batch seized for analysis may not comply with the standard, though satisfactory at the time of manufacture.
- (4) A standard, once established, may be altered only with difficulty, necessitating further legislation; consequently the effect is to retard development of spray products, since manufacturers as a rule are not inclined to produce materials superior to that demanded by the regulations.
- (5) Penalty for non-compliance with a standard is usually too low to act as a check to the sale of inferior products.

We hold that the more efficient method is to request the manufacturer to place on the container such particulars as are indicated in our forthcoming regulations. These then form the basis of unit values, and are really units of measurement by which the value of any one spray product may be assessed.

As example: the efficacy of a sul-

phur spray depends on its fineness of the particles, consequently we require this particular to be supplied on the container.

Lime sulphur depends for its efficacy upon the percentage of polysulphides present, therefore we require the manufacturer to place this percentage figure on the container.

The efficacy of acid lead arsenate depends on (a) the arsenic pentoxide content, (b) the water soluble content, and (c) the size of the particles, and so on. Particulars must be ascertained by some particular form of analysis, or measurement, so that it is necessary to indicate each aspect in the regulations, and this has involved us in a considerable amount of chemical and physical investigation.

This method cannot be employed unless the grower is supplied with data regarding the value of the units of measurement. We are, therefore,

educating our orchardists

by means of lectures and publications, to appreciate these units, so that he is able to judge from the label the value of any one brand of spray product.

The manufacturer is not requested to work to any standard, and as the best products will have the greatest sale, he is induced instead to improve his product, with the result that there will be slow but continuous improvement in materials offered for sale. Finally, if the manufacturer makes a false declaration, it is relatively easy to detect this, by analysis of seized samples, and the penalty can be made a heavy one, as he would be found guilty of fraud.

THAT LITTLE GARDEN.

(By Llywelyn Lucas.)

That little garden—how I loved
Its close confines, its mossy wall,
The bank of Morning Glory sheer,
Ringing the morning bright and clear
With coerulean call.

That little garden—how I loved
Japonica anemone,
The tender Lettuce that I grew,
The glint of water green and blue
Below the Orange tree.

It will be mine when all is gone.
It will be mine—and yours.
That little garden that was ours
As briefly as the fall of flowers
Has love, and that endures.

Concrete around the Home.

Simple and Serviceable.

FORTUNATELY concrete mixing and laying are jobs that the average handy-man can do with ease and little trouble, and add materially to the comfort and efficiency of the orchardist's home, garages, car-drives, foot-paths, verandahs, fruit stores, poultry shed floors, and many other sections surrounding the house and barns are all well served and their service augmented by the provision of some form of concrete construction, since it is indestructible, fireproof and so easily kept clean.

In the simplicity of concrete mixing lies its chief claim upon the attention of the handy-man. The first thing to note about the mixture is that it is plastic, and can be worked in all conceivable shapes and patterns, and, as an adornment of the garden can be utilised alike for approaches or for ornamental equipment of various kinds. It sets in a few hours, and can be almost immediately put into use.

Formulae of mixtures vary considerably, according to the uses to which the concrete is put, and can be obtained from almost any cement dealer or from builders or masons, so—that when the quantities of the required ingredients are known (sand, cement, gravel, stone, etc.) it is an easy matter to perform the mixing and laying operation.

So varied are the colors that can be introduced into garden paths, verandah floors, rockeries, etc., that an unlimited field is open to the imagination or taste of the operator, should he desire to add color and design to the utility of the work.

In building complete sheds or houses and for walls and fences the use of concrete blocks are becoming increasingly popular. Blocks can be made in convenient sizes as opportunity permits, and stored until sufficient are ready for the job in hand. Very little technical knowledge is needed to lay same, and even a rough carpenter can knock up such moulds and shapes as he may require for forming the concrete blocks needed.

In this way, permanent and practically everlasting additions can be added to the present equipment of the orchard in the form of buildings, and many perfectly reasonable comforts surrounding the home.

A cordial invitation to visit them during the Centenary celebrations is issued by the directors of Specialty Investments, who announce a very hearty welcome to all former, present and prospective clients during the coming festivities. Phone them at Central 2643, or write to 89 Collins-street, C.I., to ensure an appointment — but this is not absolutely necessary.

THE BAVE-U

Was the pioneer Australian Power Sprayer. It is still the leader. See it at the Centenary Show, Stand 97, Smith Street.

Manufacturers—

RUSSELL & CO.
Box Hill, Victoria.

1908	1922
1909	1923
1910	1924
1911	1925
1912	1926
1913	1927
1914	1928
1915	1929
1916	1930
1917	1931
1918	1932
1919	1933
1920	1934
1921	

Apple and Pear Export.

Mr. G. W. Brown's Report.

THE 1934 ANNUAL MEETING of the Victorian Fruit Marketing Association was of particular interest to members, in that the agenda included a personal report by the chairman, Mr. Geoffrey Brown, upon his work in England as Australian representative at the Empire Fruit Conference held in London in June.

Owing to the death of two prominent delegates to the conference, causing a postponement of the conference, originally set for March, it devolved upon Mr. Brown to convene the conference in June, and to undertake the onerous duties of chairman of the conference.

Representatives reported from Great Britain, Australia, New Zealand, South Africa and Canada (including both Nova Scotia and British Columbia).

As a preliminary principle, it was decided that as growers in the United Kingdom would be so affected by any decisions arrived at by the conference, they should be represented in the deliberations that ensued. Accordingly, Sir William Lobjoit, President of the horticultural section of the National Farmers' Union, sat in the conference on behalf of English growers.

In spite of the Ottawa conference and the imposition of a duty of 4/6 per cwt. on foreign fruit, seemingly giving a distinct advantage to Empire growers, the state of international exchange and economic conditions rather lessened the advantages sought, with the result that, supplemented by government subsidies to shipping companies, allowing reduced ocean freights, U.S.A. growers were still strong competitors for the English fruit market.

In conference with British growers, Mr. Brown evolved a scheme which should materially benefit Australian growers, the salient points covered being:—

An agreement by all Empire growers of a rotation system, by which the following export seasons shall be observed:—

Sth. Africa, arrival in England during March.

Australia, arrival in England during April to mid-July.

England—August to October.

Canada, arrival in England during November to January.

with February left open to all countries.

By this method it was submitted that the Dominions concerned should have the right of way during such months, that it would suit their several seasons, and

that it would work no hardship upon English growers during their peak season, also, it was presumed that by such a scheme the whole of the English Apple market could be supplied entirely by British growers.

Nova Scotia agreed to a limitation of 50 per cent. of their normal shipments, and the elimination of a number of varieties.

The English growers are willing to assist Empire growers by urging upon the British authorities a readjustment of tariff provisions that will favor Empire products.

Empire grading and packing to be standardised, and greater attention to be paid to color grading.

To meet this standardisation, our present special grade should be known as Extra Fancy, and our standard grade as Fancy, as now generally adopted by all other Empire exporters.

An advertising scheme should cover Empire fruits continuously, rather than the present method of each individual Dominion undertaking its own publicity.

An Imperial Fruit Committee should be established, the personnel of which shall consist of the permanent officer representative of each Dominion. At present New Zealand has one and South Africa two such officers, whilst Australia has no one specially responsible for this work.

Amongst many important points raised, Mr. Brown reported that English growers already produce more Apples than the whole of Australia, Kent alone producing more than the whole of New Zealand, yet the United Kingdom supplies only one-half of her own requirements.

Japanese Jonathans from Manchukuo were seeking an outlet upon the English market, and those that he saw were of very good quality.

The export of Apples from Australia to the U.K. should range around 3,800,000 cases.

The best Apples he saw in London were from Victoria, of which the best were packed by Mr. A. Ramage, of Pakenham.

There is cause for optimism in regard to Australian Apples on the English market, dependent upon standardised packing, and, more still, upon quality. Australia's early arrivals last season were of poor quality, and landed in bad condition.

London is the most critical market in the world. She has every country's products from which to choose, and to maintain her interest we must send quality equal to the best.

South Africa packs for the luxury market more than does Australia, consequently her prices are generally satisfactory.

Trade with northern European countries, excepting Germany, is very possible, and should be more consistently exploited, as the exchange difficulty is not a great problem.

British growers are pressing for increased duties on foreign fruits to offset currency depreciation of certain countries.

Apple growing is being increased in England. In Kent, orchards of 200 to 300 acres are common, and one grower he met produced 120,000 cases of one variety alone.

A well-attended dinner was tendered to Mr. Brown by the Victorian Fruit Marketing Association, when the guest of the evening elaborated the report presented at the annual meeting.

FRUIT JUICE REPLACES ARTIFICIAL FLAVORINGS.

The largest single sale of Raspberries ever made by the Gresham (U.S.A.) Berry Growers' Association was recently finalised, when a shipment of 500 tons was despatched to a New York company who are experimenting with fruit flavoring for gelatine desserts, instead of the artificial flavorings which they have previously used. Should the change over prove satisfactory, it will open up an increased market for the berry growers operating in the State of Oregon.



didn't realise how much they were costing per foot mile until it rained!

The real comparison of economy and efficiency of wire strapping systems can only be made in the height of a packing rush.

ANALYSE GERRARD values, and consider reliability and speed.

Gerrard Wire Tying Machines Co. Pty. Ltd.

119-125 Hawke St., West Melb., C.S.
SYDNEY, BRISBANE, ADELAIDE, PERTH.



New South Wales

Galston.—A very successful show was held by the Galston Districts' Agricultural and Horticultural Association on September 8, when the displays of fruit were both attractive and marked by a high standard of quality. Navel and Valencia Oranges predominated in the Citrus section. A district exhibits section was included for the first time, and created immense interest, the palm going to Arcadia.

The most consistent winners in the fruit section were Mr. A. J. Hitchcock, who secured 75 points, and Mr. H. Bennett, who came second with 28 points. Other prize-winners included Messrs. N. Makeshaft, Geo. Deaman, H. E. Cranson, A. Cheyne, C. D. Fagan, E. Thomas, H. D. Mitchell, A. C. Waddell, W. A. Dacker, J. Shaw, S. C. Allen, M. J. Fuller and D. Johnson.

Young.—The recent Agricultural Show was a great success. High quality fruit was displayed; Apple varieties included Romes, Democrat (Tasma), Statesman, Delicious. Oranges, Lemons and well-grown vegetables were also exhibited. Prize winners in the fruit section included A. E. Horne, A. E. Butt, R. W. Jennings, L. T. Ricketts, Mrs. M. Reynolds, R. H. Thackeray, R. Nuthall.

Young.—Entries in all exhibits at the Young (N.S.W.) Show were the best for 23 years. Fruit section awards were:—Common Stored Apples: Granny Smith, George Osborne; Democrats or Tasma, R. W. Jennings; Statesman, G. Osborne; Delicious, G. Osborne. Oranges: L. T. Ricketts. Lemons: Mrs. M. Reynolds. Soft Shell Almonds: A. E. Horne.

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THE BEST IS ALWAYS THE CHEAPEST IN THE LONG RUN

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offers the true economy of lowest finished cost, a thoroughly efficient machine service, and Australian-made machines, and wire strapping designed to ensure a satisfactory, trouble-free pack.

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SYDNEY, BRISBANE, ADELAIDE, PERTH.

GERRARD
(The Tie That Binds)
APPLE AND CITRUS PACKING
CHARTS ARE AVAILABLE FREE
ON APPLICATION GERRARD SERVICE

WELL PACKED FRUIT TREES.

Australians have got used to reading adverse criticisms in the daily press of the bad packing methods of some exporters of Australian goods. It is quite refreshing to read the complimentary remarks of the Agricultural Department of Washington, U.S.A., regarding the packing of fruit trees from Australia.

A letter sent from Washington complimented L. P. Rosen & Sons, of Carlingford, N.S.W., on their efficient packing of Citrus trees, ordered by the department, and which arrived in such splendid condition that every tree was in perfect condition for planting. Many orders for trees come from all parts of the world to this nursery in the Pennant Hills district near Sydney, whose business is growing to such an extent that its already large acreage will have to be extended.—J.L.C.

Citrus News

CITRUS EMBARGO TO BE LIFTED.

But Not Till Next Season.

At a meeting on September 11, held at Curlwaa (N.S.W.), the Member for Murray, Mr. J. A. Lawson, stated that he was authorised by Mr. F. H. Stewart, Minister of Commerce, to advise that New Zealand was prepared to lift the embargo upon Australian Citrus fruits which has been operating for the past two years.

New Zealand has been doing a considerable trade in Apples with U.S.A., and that country has a strict embargo on fruit from any country where Mediterranean Fruit Fly is prevalent, and although New Zealand itself is free from the fly, by importing fruit from a country having the fly, the embargo operates against her. She has hesitated to remove the embargo against Australian Citrus until a definite understanding with America was reached.

After several conferences, New Zealand has now agreed that if America insists upon the precaution being maintained, New Zealand will raise the embargo against Australian Citrus, and will forego the American trade in Apples.

It is expected that official announcement of the cancellation of the embargo will be made in time for next Citrus season.

CITRUS EXPORT.

Leeton.—Local growers report having received advice that their Valencia Oranges ex. "Barrabool" realised 12/- to 16/- per case.

N.S.W. CITRUS GROWERS.

Government Asked to Assist in Stabilising the Industry.

In view of the unremunerative position in the Citrus section of the fruit industry in the Murrumbidgee area, a deputation of growers recently waited upon the Minister for Commerce, Mr. F. H. Stewart, and represented to him the necessity for the stabilisation of the industry.

The deputation pointed out that in spite of the Government's export guarantee operating this season, there was such a heavy yield for disposal in the home market that the prices obtained were most discouraging, and resulted in a definite loss to the growers.

Mr. Stewart stated he would urge the setting up of a complete organisation of the industry to enable it to be rehabilitated and to devise some scheme to overcome present marketing difficulties.

THE CITRUS INDUSTRY.

The Citrus Investigation Committee met at Melbourne on September 21, General J. Heane (N.S.W.) presiding. There was a representative attendance. The Commonwealth Government is being approached regarding the outcome of the deliberations.

MONEY available
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BERRY FRUIT GROWERS,
etc. Temporary
PRIVATE LOANS,
Lowest Interest. Repayments
to suit, any reasonable security.
Confidential. No obligation. Personal application only.



Call During Centenary Celebrations
SPECIALTY INVESTMENTS, 89 Collins St.
Melbourne, C.1. Cent. 2643

AUSTRALIAN ORANGE EXPORTS.

The total exports of Oranges from Australia from January 1 to date were 233,283 cases, the principal ports to which they were consigned being London (129,262), New Zealand (60,560), Liverpool (11,667), Vancouver (6,206), Singapore (4,677), Antwerp (4,209), Hong Kong (4,000), Glasgow (2,928), Hull (2,031), Batavia (1,962), Colombo (1,696), with smaller quantities to other ports. The quantities shipped from the various States were as follows:—N.S.W. (to Sept. 15), 128,544; Vic. (to Sept. 1), 1,662; Queensland (to Sept. 8), 12; South Aust. (to Sept. 22), 101,000; West Aust. (to August 30), 2,057; Tasmania (to Sept. 28), 8.

The Romantic Development of the Chemistry of Nitrogen.

By R. A. Boyle, M.Sc., A.A.C.I.

(Continued from September "Fruit World")

For the next chapter in the romance of nitrogen fixation, we must leave the realms of chemistry and enter those of a much newer science, viz., bacteriology.

In 1877, Pasteur (the famous discoverer of the bacterial causes of many diseases), followed by others, established the fact that very minute organisms existing in the soil possessed that power which plants themselves have not, and which man has only recently succeeded in gaining, viz., the ability to harness, or bring into chemical combination with hydrogen and oxygen, the nitrogen of the atmosphere.

In describing the great cycle of life, plants may be taken as the most convenient starting point. They store the sun's energy within themselves, and build their structures from the gases in the atmosphere, and certain minerals in the soil. A proportion of the structure of every plant made up from these elements is a substance known as protein, one of whose essential constituents is nitrogen. All other living beings depend directly or indirectly upon plant life. They utilise the stored-up energy, and build their structure from the protein and other matter developed in plants. These plants, or their remains, after passing through the bodies of animals, return to the earth, where they are immediately attacked by the teeming population of the soil, and are resolved again into the original elements, namely, the energy of the sun, the atmosphere, and certain minerals. This, in short, is the never-ending life cycle. In this cycle we notice that nitrogen is both withdrawn from and returned to the air. Both these operations are performed by different kinds of organisms in the soil. One kind is able to take the insoluble and inactive nitrogen from the air, and change it into soluble and active nitrate nitrogen by combining it with oxygen. Another and opposite kind will feed off this soluble nitrate, withdraw the oxygen, and return the nitrogen to the air.

Space does not permit of a description of the patient work of those great scientists who have studied and discovered the activities of these tiny organisms. Unfortunately, these exceedingly small beings have very long names, and we refrain from inflicting them upon the reader. There are:—

1. The organisms which "fix" the nitrogen from the air, and render it soluble—nitrogen-fixing bacteria.
2. The organisms which attack the remains of animals and plants, and produce therefrom soluble nitrogen—ammonifying and nitrifying bacteria.
3. The organisms which separate the nitrogen from the oxygen, and allow it to return to the air—denitrifying bacteria.

Of the nitrogen-fixing bacteria, there are two important species. One acts slowly but surely all the time in all soils, provided that the right texture and condition are maintained. Soil temperature greatly influences the operation of this species. It is claimed that in most regions in Australia, on account of the relatively warm temperature of the soil, and the longer hours of sunshine, nitrogen fixation takes place more rapidly than in colder and wetter climates. Also, experiments prove that the amount of soluble nitrogen present in the soil, due mainly to bacteria, reaches a maximum in the spring and autumn, and a minimum in the winter. This may be the reason why top-dressings of soluble nitrogen act so beneficially to most crops when applied in the early spring. Also, after excessively wet weather, especially if it has been accompanied by cold, applications of soluble nitrogen act beneficially.

The other well-known species of nitrogen-fixing bacteria is that which associates itself with leguminous plants. It congregates in little nodules which form on the roots. It is a parasite really, which robs the plant of some of its food, but in return, as it were, it fixes nitrogen from the air and stores it in these nodules. When the plant dies or is turned under and decays, this nitrogen is liberated and passes into the soil. Leguminous crops, therefore, form a very important link in the rotation of crops, whilst they serve a double purpose (that of supplying organic matter in addition to nitrogen), if grown and ploughed under at the right stage.

In order to encourage these first two beneficial types of organisms, it is necessary to keep the soil well aired, and prevent the accumulation of water, keep the soil as warm as possible, prevent the soil from becoming too acid by adding lime where necessary, and returning to the soil as much plant and animal remains as it is possible and economical to collect.

The third and wasteful denitrifying organism will operate if water is al-

lowed to accumulate, and air kept out of the soil, or if the soil is allowed to become acid.

Human Endeavor to Cause Atmospheric Nitrogen to Combine with Other Elements.

Quite early in the history of chemistry, attempts were made to combine, by artificial means, the nitrogen of the air with the oxygen, or with hydrogen derived from water — aid and water being two practically limitless sources of these three elements. It was observed by one, Cavendish, in 1781 that small quantities of nitrogen and oxygen could be made to combine under the influence of a strong electric discharge. It is known that traces of combined nitrogen and oxygen do exist in the atmosphere, and over a year's rainfall a certain small quantity of dissolved nitrogen is precipitated. It is estimated that in this way about 5 lbs. of nitrogen, equivalent to 25 lbs., of, say, sulphate of ammonia, are added annually in this way to an acre of soil. It is considered that this union of nitrogen and oxygen in the air is brought about by atmospheric lightning.

Until the beginning of the 20th century, ammonia produced as a by-product from coal distillation, and nitrates from the Chilean deposits, were considered ample for agricultural needs. In the year 1898, however, Sir William Crookes, a famous scientist, made a rather alarming announcement. This scientist made an estimate of the annual growth of the bread-eating population of the world, together with consumption per head (five bushels per annum). He took into consideration all lands then growing wheat, and their average yield, and also made allowances for the opening up of all available land suitable for wheat. Then, basing figures on the nitrogen requirements of wheat at that time, and the potential stocks of combined nitrogen in the form of ammonia from all existing coal deposits, and in the form of nitrate from Chilean deposits, he prophesied that unless some other source of nitrogen, and that source could only be the atmosphere, could be successfully utilised, a shortage of bread would very probably occur by about the year 1931.

This statement gave fresh impetus to attempts to "fix" nitrogen, and in 1902 a plant was erected at the Niagara Falls, using that water power to produce electricity, by means of which relatively small quantities of nitrogen and oxygen were caused to combine. In 1905 the first plant to continue to have any real success was set up in Norway, again utilising the enormous supplies of water naturally available in that country as a source of power. This enterprise, under the name of the Norsk Hydro, is still operating, and successfully manufacturing large quantities of nitrates—particularly nitrate of lime. Until 1914, how-

ever, no very serious attention was given to the matter. In 1913, a German chemist, named Haber, who had been working for some years on a process whereby nitrogen might be combined with hydrogen to form ammonia on a commercial scale, was finally successful, after joining forces with a large German dye company. The process had the great advantage over the nitrogen-oxygen combination that much less power was required.

Then, in 1914, an unexpected stimulus was given to the matter, owing to the war. Germany, being blockaded from supplies of nitrates, just as France was during the Napoleonic wars, was forced to develop the Haber process as speedily as possible. The way in which German chemists countered this blockade of 1914-

15, will go down in history as one of the greatest scientific achievements the world has ever known. The problem of fixing and utilising the nitrogen of the air, for all purposes, was at last solved. Once again, necessity had been the mother of invention. Towards the latter stages of the war, Britain also evolved a means of fixing nitrogen, and erected a factory at Billingham. Since the war, other processes have been devised, and to-day there are fixation plants in Britain, Germany, France, Norway, Italy, America and Japan, whilst one is to be erected in South Africa.

It has since been considered that Sir William Crookes misjudged the enormous supplies of nitrates still to be won from the Chilean mines. He may have been premature in his calculations, but

his announcement, together with the exigencies of the Great War, have led to the solution of this great scientific problem, as the following figures will indicate:—

Note, that whereas the quantities of by-product sulphate of ammonia and Chilean nitrate of soda produced, and, of course, also consumed, have remained approximately the same as they were in 1913, metric tons of nitrogen fixed from the air have increased in twenty years from practically nil to 1½ million tons. It is interesting also to note that of the total quantity of nitrogen produced (the greater portion of which is consumed as fertiliser), in 1932-33, 50 per cent. was prepared in the form of sulphate of ammonia; in other words, so popular is this fertiliser that as much nitrogen is ap-

APPROXIMATE WORLD PRODUCTION OF NITROGEN.

	(Metric Tons of Nitrogen.)					
	1913.	1924-25.	1928-29.	1930-31.	1931-32.	1932-33.
Sulphate of Ammonia—						
By-product	260,000	325,000	376,000	360,000	300,000	267,000
Synthetic	60,000	497,000	485,000	350,000	522,000	574,000
Chilean Nitrate of Soda	400,000	350,000	490,000	250,000	170,000	71,000
Cyanamide	—	—	192,000	201,000	135,000	172,000
Nitrate of Lime	—	—	136,000	110,000	79,000	111,000
Other Synthetic Forms	—	—	383,000	393,000	350,000	442,000
Other By-product Forms	—	—	81,000	31,000	30,000	28,000
TOTALS	720,000	1,172,000	2,113,000	1,700,000	1,600,000	1,670,000

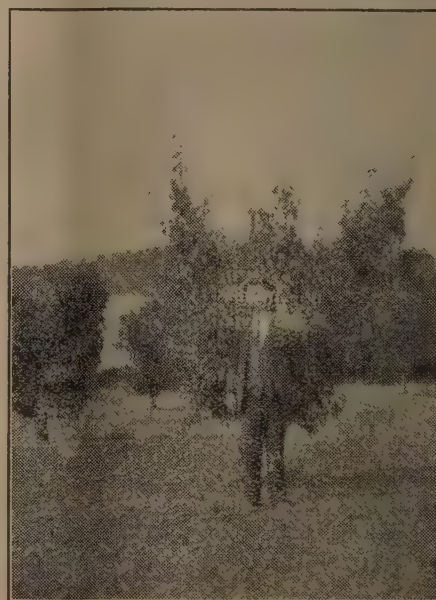


Fertilised Regularly with Super 5 lbs.,
Ammonia 5 lbs., and Potash 3 lbs.

POTASH PLAYS ITS PART

IN PRODUCING A PERFECT
TREE THAT WILL BEAR
REGULAR AND HEAVY CROPS
OF PERFECT FRUIT.

A heavy dressing? — Yes, but a profitable one. The "Josephines" illustrated on the left produced about 100 cases per acre more than those shown in the other photo — and better fruit at that!!



Improperly Fertilised.

The POTASH, not only gave better flavour and more even ripening, but its use enabled the tree to make the best of the Ammonia and Super application.

For Prices apply to your local Fertiliser Agent. For further particulars, soil analysis, or advice on general orchard problems, apply to:—

PACIFIC POTASH LIMITED

RESEARCH SERVICE

SCOTTISH HOUSE — 19 BRIDGE ST. — SYDNEY

plied to the soil in that form as in all the others combined.

Let it should be wondered how the atmosphere might be affected by such fixation of nitrogen, although, of course, much is eventually returned to it, it might be interesting to learn that over one square mile of the earth's surface presses about 20 million tons of nitrogen.

Potash.

Muriate or Sulphate?

NUMEROUS GROWERS have written asking the difference between the two principal commercial grades of potash appearing on the Australian market. The following notes have been supplied by the Research Service of Pacific Potash Ltd., Sydney.

Muriate of potash is a chemical compound of potassium oxide and chlorine. One hundredweight of this compound contains 58-60 lbs. of the pure oxide, which is the active plant food constituent. Chlorine is, in small quantities, essential to the proper nutrition of plants.

Sulphate of potash is a compound, which, as its name implies, supplies sulphur, which is also a useful soil constituent. This grade supplies about 54 lbs. of pure oxide per cwt. of compound.

As far as quantity of produce is concerned, the most careful experiments have generally failed to indicate any difference one way or the other. Some crops have seemed to favor the one form whilst other crops have at times indicated a slight preference in the other direction; but as a rule, there is no significant difference one way or the other.

For Tobacco, in the growth of which potash is very important, the muriate tends to affect adversely the burning quality of the leaf, and consequently, sulphate is used almost exclusively for this particular crop. There are also indications that sulphate is the better form to use on Pineapples. With these two exceptions, there is no reason to favor sulphate unless the soil concerned is extremely "sour" or acid. It will occur to all progressive growers that the soil should never be allowed to get into a state of high acidity, but should be treated liberally with lime, and therefore it might be said that on any soil that is in good condition muriate may safely be used.

Some growers fancy that the higher cost of sulphate is an indication of higher quality, but it may be explained that the two forms are prepared from the same raw materials, and that the process of purification results, first, in the production of muriate, from which, by certain additional treatments, the sulphate is produced. The extra cost therefore is merely a reflection of the more costly manufacturing processes.

One point in favor of sulphate is of importance to those growers who do

their own mixing—as opposed to the use of ready prepared commercial mixtures—and that is that muriate has a tendency to set in wet weather.

Broadly, however, it may be said that for all crops grown, muriate may be used with all confidence.

It Pays to Advertise.

Success of Dried Fruits Publicity Campaign.

According to Mr. J. M. Balfour, chairman of the Victorian Dried Fruits Board, the constant publicity being put before the Australian public regarding the inclusion of dried fruits in the regular diet of the nation, has resulted in a greatly increased consumption in the past year.

Many methods of keeping dried fruits before the public have been used. Newspaper advertisements, window displays, radio broadcasts, recipe books, films, posters and others, all calling attention to the claims of dried fruits as a food produce.

The Joint Publicity Committee is to be congratulated upon the very satisfactory results achieved.

Fruit Fly Precautions.

Rigid Inspection of Fruit from N.S.W. to Victoria.

Carriers and Hawkers Warned.

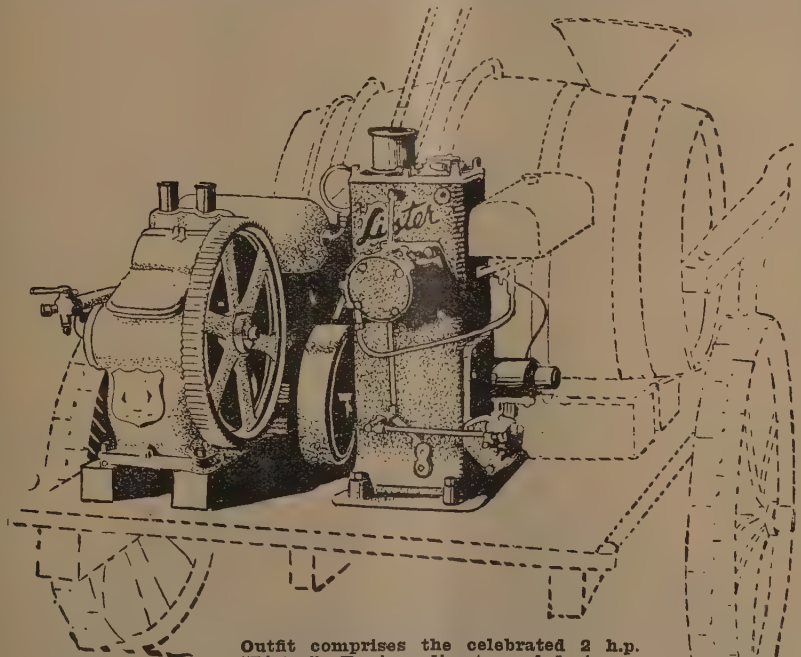
The Minister of Agriculture in Victoria (Mr. J. Allan, M.L.A.) stated recently that owing to an outbreak of Fruit Fly in the Murrumbidgee Irrigation Areas of New South Wales, his department is adopting stringent measures to prevent fruit from N.S.W. coming into Victoria at border crossings. He therefore desired to warn carriers and hawkers that any person bringing any fruit into Victoria without inspection is breaking the law, and is liable not only to prosecution but to having the fruit seized and destroyed as well.

Shopkeepers and others who purchase such fruit are liable also to such penalties under the provisions and regulations of the Vegetation and Vine Diseases Act.

The Minister trusts that all concerned will take heed of this warning.

In a Class of its Own:

Lister - Myers Spray Outfit



Outfit comprises the celebrated 2 h.p. "Lister" Engine direct-coupled to a "Myers" Self-Oiling Pump. English Oak Cask, Steel Non-skidding Wheels on Transport. Suitable for Guns or Hoses. Free Estimates given for Stationary Spraying Plants.

A. G. Webster & Sons Ltd., Hobart



IN SEPTEMBER, the root feeders of trees and vines will commence their eager search throughout the soil for available nitrogen. The crop of fruit which they set, its ultimate development into suitable maturity and size, and their resistance to dry weather, frosts, wind, heat waves, and pest attacks, will all largely depend upon the quantity of nitrogen which these feeders can procure at this critical period. Most of the nitrogen which was applied to the soil, in whatever form last year, has been leached away, and, as bacterial activity is low at this time, organic forms will become only slowly available. What more desirable means of ensuring an adequate supply could there be than Sulphate of Ammonia—immediately available, and the cheapest form of nitrogen procurable.

H14/34

Canned Fruits.

The Canned Fruit Trade

Clearance of Stocks.

Owing to very satisfactory selling arrangements in Great Britain having been developed and supplemented by judicious advertising, many new customers have been found for Australian canned fruits during the past season. So responsive have the distributors been to the improved quality in Australian fruits, both as to canning and packing, that a phenomenal year of sales has been reported, in fact, a record of 1,300,000 cases was established, nearly doubling the previous year's volume.

At the beginning of the year there was a large carry-over of Australian canned fruits. Not only has this been cleared, but the whole of the 1934 shipments have been absorbed. With increased sales also experienced in the domestic trade the packing floors have practically been cleared, and canners are facing the coming season with optimism.

The prospects for the 1934 canning season are decidedly healthy, and the various floors should be able to absorb all of the fruit suitable for canning, even with the prospect of heavy yields; a most desirable position in which the industry finds itself.

The British market, though dependent largely upon the financial outlook and international exchanges, promises to favor Australia again this year, which expectation is further favored by the recommendation of the English canning interests that tariff protection be imposed upon all foreign canned fruits coming into the country. Under the provisions of the Ottawa conference, this should favor Australian fruits as against those from California, and should provide a further opportunity for our products to strengthen their already desirable reception upon the British market.

CANS GALORE!

That the American public is educated to eating canned foods is proved by the enormous quantities of cans required by the Pineapple industry of the Hawaiian Islands.

Six full-time can manufacturing companies will this year supply 260,000,000 containers for the fruit and fish canning industries in the islands, an increase over 1933 of 60,000,000 cans.

So well equipped are these factories that they are able to supply the cans required for an annual Hawaiian Pineapple pack of twenty million cases, but if necessary, they could speed up production to the almost unbelievable volume of three and a half million containers per day of eight hours running. —“Western Canner and Packer.”

Leeton Cannery

Interview With Mr. Brady.

Comparative Value of Peach Varieties.

It was a pleasure to meet Mr. J. Brady, manager of the N.S.W. State Cannery, on our recent visit.

On the subject of Peach varieties for canning, Mr. Brady states the following are grown on the area (in order of importance) as follows:—

Pullars, Golden Queen, Phillips, Levis and Goodmans.

Mr. Brady states that the Pullars Cling, although probably the best grower's Peach known, does not turn out a really high-class canned Peach, but thinks it will be many years before the Pullar is discarded, as the grower will probably never see a better cropper.

The Golden Queen is a very high-class canner, and is highly thought of in Great Britain. It is possible, however, that it may not suit every district. It does particularly well on the Murrumbidgee Irrigation Area.

Phillips Cling is a good all-round Peach, and with good cultivation and properly balanced fertiliser, is giving excellent results.

Levis Cling, although a very high-class canner, is inclined to run to small sizes, and is, therefore, not a good grower's Peach.

Goodmans does not do as well here as in the Goulburn Valley, and falls very badly when ripening. The ideal Peach should have a clear yellow centre, and retain its shape well after processing. The red centre of the Pullar, of course, is its chief fault.

There are two or three different types of Phillips Cling, but, where a good type is planted, it is a very hard Peach to beat for all-round purposes, and, properly handled, crops consistently.

Peak Cling is one of the highest quality Peaches we know of, but we are not in a position to advocate the planting of it to any great extent until more is known of its cropping habits, as it is realised that unless a Peach crops consistently and fairly heavily, it is of no use advising growers to plant it.

Mr. Brady states that in addition to Peaches, Pears and Apricots, a small quantity of Gordo Blanco Grapes are being canned each season. Next season it is thought that 1,500 tons of Apricots (principally Trevatts), will be canned, also 3,500 to 4,000 tons of Peaches.

Negotiations have been completed with the Government for the growers to take over the State Cannery in three years' time to be run by a co-operative company, comprised of Leeton, Griffith and Yenda growers. The Government is now erecting a 30,000 case cool storage plant, which is to be completed early in December. The growers will also take over this plant with the cannery.

Canned Fruit Exports

A statement has been received from the Canned Fruits Control Board setting out particulars of exports of canned fruits from Australia to various destinations from the commencement of the season (January 1) to August 31, 1934. The following figures are given (in dozen tins): Total export 2,120,173 (30-oz.), 50,698 (21-oz.), 653,525 (16-oz.). This was made up of Apricots 256,819 (30-oz.), 2,400 (21-oz.), 92,452 (16-oz.); Peaches 1,173,772 (30-oz.), 20,476 (21-oz.), 342,323 (16-oz.); Pears 590,154 (30-oz.), 205,462 (16-oz.); Pineapples 99,428 (30-oz.), 27,822 (21-oz.), 13,288 (16-oz.). The heaviest export was to U.K., being 2,025,790 (30-oz.), 12,700 (21-oz.), 582,013 (16-oz.). Additional quantities (in dozen tins)—10 oz.—Apricots 272 to East, 2 to miscellaneous; Peaches, 1,724 to U.K., 76 to East, 18 to miscellaneous;

Pears, 572 to East, 22 to miscellaneous. 18-oz. — Apricots, 3,597 to Canada; Peaches, 7,165 to Canada, 512 to East; Pears, 630 to Canada. 104-oz.—Apricots 960 to Canada; Peaches 2,857 to Canada; Pines 270 to U.K., 17 to New Zealand, 3,480 to Canada.

EXPORT OF FRUIT SALAD.

An interesting development at the Leeton cannery has been the processing of fruit salad.

In mid-September, a trial shipment of 300 cases of fruit salad was despatched from Leeton to London.

AT THE MELBOURNE SHOW.

At the Centenary Royal Agricultural Show to be held in Melbourne from October 18 to 27, Messrs. R. Werner & Co. Pty. Ltd. have their usual stand at the corner of McCracken-avenue and Lobb-street, and will be pleased to answer enquiries.

The Werner refrigerating machinery can also be inspected at the firm's city showrooms, 610 Little Collins-street, Melbourne. Growers and others interested in N.S.W., South Australia, and West Australia, can obtain information from Messrs. Werner & Co.'s agents as follow:—R. J. Lindsay, 99 Kippax-street, Sydney, N.S.W.; Harris, Scarfe, Grenfell-street, Adelaide, South Australia, and Harris, Scarfe and Sandover, Hay-street, Perth, W.A.

Unpleasant Prospect.

The judge and the banker were talking about ages in their club one evening.

"You are not old, man," said the judge. "Why, I could give you fifteen years!"

"Now, now," playfully remarked the banker, "please, don't talk shop!"



View of the Cannery at Leeton, N.S.W.

VALLO

Patent Codlin Moth Tree Bands



Certain Death to All Grubs That Attack Fruit Trees

It is estimated that of all Codlin Moths more than 80% are females and that a female moth lays as many as 50 eggs. On the assumption that only 50% of the eggs are fertile, a kill of 100 grubs in a tree band is definitely responsible for the prevention of 2,000 moths in the first year.



The above photograph (shows the actual size) inner side of an 8-inch section of "Vallo" Patent Codlin Moth Tree Bands in which 50 or more dead grubs or caterpillars can be seen. This, however, does not represent the full number of the kill, as this photograph shows only one set of corrugations. The Band is actually a double trap as it not only traps the grubs in the corrugations lying immediately next to the trunk of the tree (as shown above) but a similar number are trapped and killed in the second series of small passages which are formed by the smooth outside section of the Band against the corrugated section.

Your Orchard is not adequately protected until fitted with "VALLO" Patent Codlin Moth Tree Bands.

Manufacturers: **VICTOR LEGGO & FARMERS LIMITED**
222 QUEEN STREET, MELBOURNE

BRANCHES: SYDNEY — BRISBANE — ADELAIDE — PERTH



Arsenate of Lead

Official Analyses of Samples

(By W. C. Robertson, Chemist, Victorian
Department of Agriculture.)

ARSENATE OF LEAD, incorrectly termed "arsenic" by the majority of horticulturists, is not, by any means, a perfect insecticide for the control of Codlin Moth. Its world-wide use for the purpose is due solely to the fact that, despite intensive research, agricultural chemists so far have been unsuccessful in producing in economic commercial quantity, any compound which is equally effective.

It was claimed that orchards which were sprayed with lead arsenate in the early days of Victorian horticulture were more or less injured. This may have been due, in many cases, to faults in the method of manufacture. However, since then many improvements have been made, and the local brands of lead arsenate now compare very favorably with any of those imported.

The old-time method of producing lead arsenate, by causing lead acetate to react with sodium arsenate, has long been superseded by a more up-to-date method, which produces a purer and more stable article. The crude admixture of lead acetate and arsenate of soda produces what is termed a basic arsenate in which the arsenic (arsenic oxide) content is about 25 per cent., which is comparatively low, and the lead (lead oxide) content high, approximately 75 per cent., the ratio of arsenic to lead being as 1 : 3, i.e., one part of arsenic to three parts of lead. For the purpose of this article, "arsenic" is to be taken as arsenic pentoxide and "lead" as litharge or lead oxide.

In recent years, the method of manufacture in general use on both sides of the world is one termed the "acid" method, which consists of dissolving arsenious oxide in vats with nitric acid and then adding a calculated quantity of lead. The resulting white deposit is either packed in containers and sold in paste form, or where the dry powder is required, the paste is filter-pressed and artificially dried until practically moisture free. This method, when properly controlled, produces a consistently pure acid lead arsenate having a high arsenic (32 per cent.) low lead (64 per cent.) ratio, of approximately one part of arsenic to two parts of lead, and in this respect it differs greatly from the acetate-arsenate method.

Apart from the variation in the percentages of arsenic and lead, there are other pronounced differences between the two lead arsenates, particularly in regard to density and toxicity. Acid lead arsenate with a density of approximately 5.8 is much lighter than the

heavier basic salt with a specific gravity of about 7.1, while the former compound, by virtue of both its physical and chemical composition possesses a much greater toxicity or killing power. As arsenic is assumed to be the killing agent in both forms of arsenate, it is only to be expected that the salt containing the highest percentage of arsenic, all other considerations being equal, will show the greatest toxicity. Similarly, the lighter the arsenate the better the suspension in water, which, in turn, means a better spread when spraying with its attendant advantages.

The Fungicides Act 1928 requires all brands of lead arsenate on the market in Victoria to conform with the proclaimed standard, i.e.:—"They shall contain not less than 25 per centum of arsenic pentoxide combined with lead, and not more than 1 per centum of water soluble arsenic compounds calculated as arsenic pentoxide both calculated on the dry basis."

This standard was deliberately planned many years ago, with the purpose of including both the basic and acid arsenates of lead. In view of the fact that basic arsenate is definitely inferior to the acid salt, it would appear as though the existing standard needs revision.

the inter-actions between different kinds of sprays are such that the slightest departure from normal, on the part of either the operator or the weather, may result in some damage. When this happens, it is unfair to place the blame on the particular brand of arsenate of lead which has been used. For example, lime sulphur (calcium sulphide) reacts with lead arsenate to produce, in the main, lead sulphide and calcium arsenate. Under certain conditions, this reaction is slowed down and the ill-effects of the comparatively soluble calcium arsenate are not so pronounced, particularly when the spray carries lime hydrate, in excess. In this connection spray residue on the trees may be the cause of some perplexing damage.

Another little known cause of burn or blemish is the presence of alkali in the spreader used, usually sodium bi-carbonate (baking soda), which forms soluble sodium arsenate or sodium sulphide according to whether the spray used is lead arsenate or lime sulphur. When they are formed during summer spraying, both of these alkaline compounds have a very deleterious effect on leaves and fruit.

A complete analysis of 14 samples of lead arsenate is given in Table I. Six of these were manufactured in Victoria

Sample as Received.

On Dry Basis.

Brand.	Place of Manufacture.	Sample as Received.			Water of Constitution and Undetermined.	On Dry Basis.		
		Moisture.	Arsenic (As ₂ O ₅).	Lead Oxide (PbO).		Arsenic (As ₂ O ₅).	Lead Oxide (PbO).	As ₂ O ₅ Water Soluble.
		%	%	%	%	%	%	%
Vallo (Paste)	Vic.	49.12	16.38	36.62	1.88	32.20	64.10	.34
Lion (Paste)	Vic.	45.44	17.34	35.21	2.01	31.77	64.52	.34
Lion (Powder)	Vic.	.45	31.63	65.20	2.76	31.77	65.48	.23
Arsinette (Powder)	N.S.W.	1.03	31.25	60.73	6.99	31.57	61.34	.69
Aero (Paste)	Sth. Aust.	48.96	15.27	33.42	2.35	29.92	65.48	.69
Aero (Powder)	Sth. Aust.	.58	31.24	64.16	4.02	31.42	64.52	.34
*Manganar (Powder)	U.S.A.	1.76	38.91	—	—	39.60	—	1.38
†Ortho (Powder)	U.S.A.	.38	31.53	63.73	4.36	31.64	63.96	.25
Unity (Powder)	England	.18	32.67	63.44	3.71	32.72	63.54	.34
Summit (Powder)	Germany	.14	30.58	63.05	6.23	30.62	63.14	.23
Jaques (Paste)	Vic.	47.70	16.93	33.31	2.06	32.36	63.68	.34
Bergers (Paste)	Vic.	48.53	16.73	32.92	1.82	32.50	63.96	.34
Blyths (Paste)	Vic.	48.73	16.66	32.51	2.10	32.50	63.40	.57
Hemmingsways (Powder)	England	.40	32.32	64.00	3.28	32.44	64.24	.23

*Manganar is manganese arsenate.

†This sample is obviously not ortho-arsenate.

The orchardist requires the insecticide to give

a maximum kill

with a minimum of damage to leaf or fruit, but with the intensity of the summer spray programme in Victoria,

and three in other States, while the remaining five were imported from overseas.

A survey of the analytical figures in this table discloses two outstanding and interesting facts, viz., (1) the majority



A McCormick Deering two-wheel Power Sprayer at work in an Orchard at Mitcham, Vic.

● A complete range of Ploughs, Harrows and Cultivators for use with horses or tractor, Power Sprayers in two-wheel and four-wheel types, and Tractors in various types and sizes are included in the McCormick-Deering line of orchard equipment.

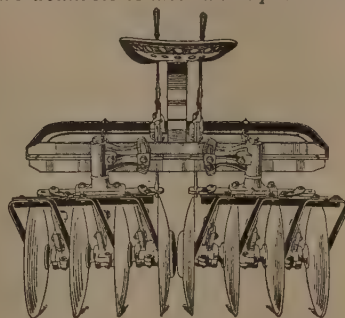
You need this modern equipment in your orchard. Specially designed for orchard work, this equipment is particularly suitable for your requirements. It combines quality construction with ability to do good work under a wide variety of conditions, and when it comes to a question of operating efficiency and long life, McCormick-Deering orchard equipment offers value beyond comparison.

See your local agent about this McCormick-Deering equipment, or write us for illustrated pamphlets.

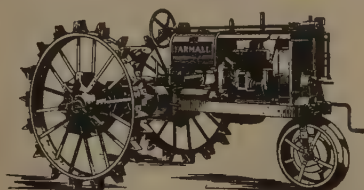
You need this Equipment in Your Orchard



The McCormick-Deering No. 4 Orchard Mouldboard Plough illustrated above is made in 2 and 3-furrow sizes. Other types of Ploughs are available to meet all requirements.



Here is the International Reversible Disc Harrow. Made in 4 and 5-ft sizes with 18 or 20-inch discs, this Harrow is a splendid proposition for the orchardist.



This is the McCormick-Deering Farmall 12, a splendid Tractor for orchard work. Develops 13.45 h.p. on the belt. Does the work of four horses. Turns in a 7-ft. radius.

of the samples show a very even composition, with a ratio of approximately one part of arsenic to two parts of lead, thereby proving the arsenate to be acid in character, and (2) all the samples of lead arsenate comply with the proclaimed standard. Apart from the sample of Manganar, which consists of manganese arsenate, there are two samples, i.e., Summit and Aero (paste), which show a tendency to depart from the normal, the percentage of arsenic in each instance being somewhat low when compared with the percentage of base. On the other hand, the sample of Arsenette shows a comparatively high arsenic percentage when compared with the percentage of lead. The above remarks in connection with these samples must not be misconstrued and considered condemnatory.

Owing to the number of inquiries received from growers in reference to Manganar, a sample was obtained for the purpose of analysis and comparison. While this sample contained a high percentage of arsenic, it is worth noting that the percentage of water-soluble arsenic is, when determined comparatively, well above the limit proclaimed by the standard for lead arsenate under the Fungicides Act. It should be remembered that water-soluble mineral compounds are a danger during summer spraying, and the collective action of water-soluble arsenic covering several sprayings may accentuate the trouble.

The increasing use of the spreader or wetting agent with lead arsenate is doubtless due to demand, but the fact remains that the indiscriminate use of these mixtures or compounds by the orchardist, irrespective of their composition, must be regarded with some misgiving; in fact there should be no necessity for their use. The manufacturers of lead arsenate, by producing an article of improved physical condition with a degree of fineness approaching the colloidal, should obviate the use of a spreader.

With the object of getting some idea of the degree of fineness of the samples of arsenate collected, a suspension test was carried out on all the samples. The results appear in Table II. The method used, which is not claimed to be any more than comparative, consisted of weighing out a quantity of paste or its equivalent in powder, carefully working this into a thin paste, transferring the sludge to a cylinder and, after adding the calculated quantity of water, vigorously stirring for 30 seconds, and allowing it to stand for (1) 5 minutes, (2) 30 minutes. After each interval a known quantity of the suspension was transferred to a weighed filter paper and the suspended insecticide estimated by drying the paper to constant weight and reweighing. The weight of arsenate taken and the volume of water used were calculated to equal a field spraying

INTERNATIONAL HARVESTER COMPANY OF AUST. PTY. LTD.
543-555 Bourke Street, Melbourne, C.1.

Telephone: Central 8540 (5 lines).

McCORMICK-DEERING

equivalent to 2½-lb. paste or 1½-lb. powder per 50 gallons.

As will be seen from the figures, the degree of fineness

of some of the arsenates on the market could be improved considerably. On the other hand, some of the samples are colloidal and show appreciable suspension even after 24 hours. Generally speaking, the powders do not suspend as well as the pastes. This is probably due to the destruction of the colloidal nature of the original paste by the action of heat during drying. Although peculiar, it

would appear that the moisture content of the sample bears some distinct relation to the power of suspension, apart altogether from the degree of division of the insecticide. At least one sample is suspected of having a small amount of spreader in its make-up, which in this test assisted it to obtain fairly high figures.

A study of the analyses (Table I.) and of the figures of the Suspension Test (Table II.) proves that, while all the lead arsenates on the Victorian market may be good, it is obvious that some are better than others.

Table II.—Suspension Test, Degree of Fineness.

Brand.	Percentage of Arsenate Remaining in Suspension After Standing.		Grams of Arsenic (As ₂ O ₅) per Gallon, in Suspension five minutes after Agitation.
	5 Minutes.	30 Minutes.	
Vallo (Paste)	93.6	80.8	3.42
Lion (Paste)	36.6	27.6	1.32
Lion (Powder)	49.7	18.8	1.77
Arsinette (Powder)	79.2	67.0	2.85
Aero (Paste)	40.8	16.8	1.39
Aero (Powder)	77.6	59.2	2.78
Manganar (Powder)	44.0	15.2	1.98
Ortho (Powder)	47.2	32.0	1.70
Unity (Powder)	64.8	24.0	2.40
Summit (Powder)	85.6	53.2	2.98
Elephant (Paste)	92.8	81.6	3.42
Bergers (Paste)	74.4	45.2	2.76
Blue Bell (Paste)	86.4	73.6	3.20
Hemmingways (Powder)	62.6	16.8	1.09

(These analyses were made by A. J. Guest, Analyst, Department of Agriculture.)

Lime Sulphur Sprays

In reply to enquiries by growers, Mr. S. Fish, M.Agr.Sc., Victorian Government Plant Pathologist, advises as follows:—

(1) Colloidal sulphur is being used in New Zealand as a cover spray for the control of Brown Rot of stone fruits. The matter was discussed with Dr. Cunningham during his recent visit. He informed me that as many as 5-8 cover sprays were applied, using 4 lbs. of colloidal sulphur to 100 gallons of spray.

The colloidal sulphur which is being used in New Zealand was imported from England about two or three years ago.

(2) The polysulphide sulphur content of the Victorian brands of lime sulphur vary from 20-25 per cent., according to the methods of analysis employed by the Department of Agriculture. It is the polysulphide sulphur that determines the fungicidal power of a lime sulphur.

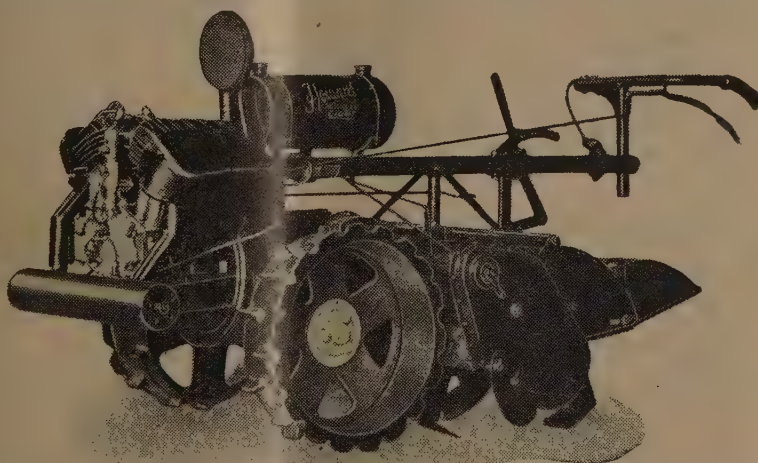
In New Zealand a particular method of analysis has been adopted, both by the Department of Agriculture and the manufacturers. This makes it possible for the lime sulphur to be sold on the basis of the number of units of polysulphide sulphur present in the particular lime sulphur.

In spraying experiments, the polysulphide content of the diluted spray necessary to control the disease is determined, and where this is done the proper dilution for any particular forms of lime sulphur may be obtained by dividing the polysulphide content, as shown on the label, by the percentage of polysulphide necessary to control the disease. The resulting figure will give the dilution necessary. For example, if the polysulphide content on label shows 20 per cent. and it is desired to use a dilute spray of .2 per cent., then 20 divided by .2 = 100, which would represent the number of gallons of water to be added to one gallon of the commercial lime sulphur to make a spray of the desired strength.

Boy (to porter): "Hi, there's a man in this carriage gone barmy—he says he is Napoleon."

Porter: "Never mind. The next stop is Waterloo."

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Spraying Fruit Trees

The Arsenate Series

(By Dr. G. H. Cunningham, Mycologist, and W. Cottier, Assistant Entomologist, Plant Research Station, Palmerston North, New Zealand.)

LEAD AND CALCIUM ARSENATES are used to-day in combating chewing insects, the object being to cover the fruit and foliage with a poisonous protective film. This method of protecting plant tissues was initiated in North America, where Paris green was used about the year 1867 to combat the Colorado beetle, and later against other chewing insects. As this compound was found to be variable in composition and relatively unstable, other materials—one of the best known being London purple—were tried as substitutes, but with little improvement until the introduction of lead arsenate. The marked advantages of this last, particularly when its manufacture became stabilised, led to its becoming the standard insecticide for combating chewing insects throughout the world.

The lead used in the manufacture of lead arsenate is relatively costly; consequently, in order to reduce the cost of arsenical sprays, numerous attempts have been made to place upon the market arsenates made from other bases, such as calcium, iron, zinc, aluminium, etc. Of these, calcium arsenate has given the best results, but a standardised product has yet to be secured.

There are several lead and calcium arsenates, and as these react differently towards insects and plants it is necessary to discuss them more fully and to indicate methods whereby their respective values may be assessed, and stability of spray applications brought about. For until such work is undertaken the orchardist has no means of assessing the relative worth of any arsenate offered for sale.

Lead Arsenates.

Lead arsenate was discovered by F. C. Moulton and introduced as an insecticide during the year 1893 for the control of gypsy moth in the State of Massachusetts, U.S.A. (Forbush and Fernald, 1896); and subsequently tests showed it to be superior to the earlier arsenical sprays for combating other chewing insects. At that time, and for many years subsequently, lead arsenate was thought to be a standard product; but varying results secured in the field forced workers to a realisation that such was not the case, and recent chemical investigations (which are not yet finalised) have shown the existence of several lead arsenates. In fact, it has been

shown that the chemistry of certain of these is decidedly complex, so that it is

The articles appearing in recent issues of the "Fruit World," from Dr. G. H. Cunningham, are widely esteemed.

The article herewith is worthy of close perusal and study. It is of commercial importance to the fruit industry.

Lead arsenates—acid, basic and colloidal are discussed, also calcium arsenate.

Arsenate pentoxide is the killing agent. Commercial acid lead arsenates now offered to growers are practically uniform in this regard (30 to 33 per cent.).

The mouths of freshly emerged larvae were measured. The effective maximum size of arsenate of lead particles is assumed to be 10 microns. A micron is 1/25,000th of an inch.

Insufficiently small particles affords a possible explanation as to conflicting results in spraying with lead arsenate.

Effectiveness is dependent, not alone on dosage, but also as to whether the arsenate has a lead or a calcium base and is of the acid or basic type.

Basic lead arsenate is being used safely on Peaches in U.S.A.

Acid lead arsenate (under defined conditions) is safe for Apples, Pears, Plums and Cherries, but unsafe alone on Apricots, Nectarines and Peaches. The safe formula for the three last mentioned is given in this article.

The mixing of lime sulphur with lead arsenate is fraught with great danger unless precautions are taken. When the mixture turns black, look out for trouble. Details for safe mixing are given in this article.

not possible to do more than speculate as to their composition.

Pickering (1907) appears to have been the first to investigate the matter, and demonstrated that two compounds were produced — acid lead arsenate (PbHAsO_4), when certain proportions of lead nitrate were added to a solution of acid sodium arsenate; and what he considered to be the triplumbic ortho arsenate ($\text{Pb}_3(\text{AsO}_4)$, when lead acetate was used in place of the lead nitrate. Since then workers have demonstrated that there are no less than six possible lead arsenates (McDonnell and Smith, 1916 and 1917); but of these it appears probable that there are not more than two produced commercially, these being discussed more fully below. The others have been produced only in the laboratory, or occur possibly to a certain extent in certain of the commercial basic arsenates.

(1) Acid Lead Arsenate (PbHAsO_4).

This constitutes about 85 per cent. of the lead arsenate of commerce, and fully 98 per cent. of that used in New Zealand. This compound is usually known in the United States as "acid" lead arsenate—a term which has come into general use in the Dominion—but the preparation is more properly named diplumbic hydrogen arsenate or diplumbic ortho arsenate, terms which are scarcely likely to become popular with the orchardist, hence our choice of this common name. Acid lead arsenate may be prepared commercially by one of several methods (the particular method is immaterial so long as the product is standardised) and possesses a theoretical composition of lead oxide (PbO), 64.29 per cent.; arsenic pentoxide (As_2O_5), 33.13 per cent.; water of constitution, 2.58 per cent. The ratio (by weight) of lead oxide to arsenic pentoxide is theoretically 1.94:1.0.

(2) Basic Lead Arsenate ($\text{Pb}_5(\text{OH})(\text{AsO}_4)_3$).

Basic lead arsenate was first used in the United States, apparently by Volck (1911), on Apple trees in the Pajaro Valley, California. Since then it has had a limited application in that country (about 15 per cent. of the total amount of lead arsenates sold being this compound) principally on stone fruits, especially Peaches. It has had practically no sale in New Zealand, owing to the difficulty of procuring a genuine product, those offered under this name being either acid lead arsenates or mixtures of acid and basic arsenates. In literature there has been consider-

able discussion as to the chemical composition of the basic lead arsenates of commerce. Pickering (1907), claimed that the interaction of lead acetate and acid sodium arsenate lead to the production of a salt with the composition of $Pb_3(AsO_4)_2$. Recent workers consider that it is doubtful if an arsenate of this composition is formed. On the contrary many (cf. Smith, 1916; McDonnell and Graham, 1917; Cook and McIndoo, 1924; Thatcher and Streeter, 1924) consider it to be composed largely of the more basic $Pb_5(OH)(AsO_4)_3$, or a mixture of this and acid lead arsenate.

Assuming that its composition is $Pb_5(OH)(AsO_4)_3$, then basic lead arsenate has the theoretical composition of lead oxide (PbO), 75.9 per cent.; arsenic pentoxide (As_2O_5), 23.5 per cent.; water of constitution, 1.6 per cent. The ratio (by weight) of lead oxide to arsenic pentoxide would therefore be 3.23:1.0.

(3) Colloidal Lead Arsenate.

Under this name a recent product of British manufacture has been placed on the New Zealand market. Analysis has shown that it is an acid lead arsenate containing approximately 50 per cent. by weight of water. The advantage claimed for it is that the particles are in an extremely fine state of division, and that this is the case has been determined by analysis. As this product has not been tested other than on an experimental scale it is not yet possible to indicate whether its higher cost is warranted.

Calcium Arsenates.

It is not known when calcium arsenate was first introduced into commercial practice, but Pickering claimed that it had been used in the United States prior to 1907. This spray was first introduced with a view to lessening the cost of the arsenate sprays, since the calcium base is much cheaper than the lead used in the preparation of lead arsenates. When first employed it was thought that, like lead arsenate, it, too, was of relatively simple and constant composition; but recent work has demonstrated that three possible calcium arsenates exist, differing in their order of basicity. The first calcium arsenate was apparently an acid salt with the formula $CaHAsO_4$ (Lovett and Robinson, 1917). A second calcium arsenate with the formula $Ca_3(AsO_4)_2$ was claimed to have been produced by Robinson (1918); but recent workers (Thatcher and Streeter, 1924; Goodwin and Martin, 1926; Smith and Murray, 1931) are not agreed that this is the formula of the compound formed by his process. A third, strongly basic arsenate with the formula $Ca_5(OH)(AsO_4)_3$, was prepared by Tartar, Wood, and Hiner (1924). Smith and Murray (1931) analysed some sixteen commercial calcium arsenates, and as a result concluded "that the arsenic in calcium arsenate practically never

exists solely as tricalcium arsenate, but that a considerable portion, and perhaps in some cases all of it, is present in the form of a basic arsenate of undetermined composition."

It is possible to produce commercially a calcium arsenate of constant composition with the formula $CaHAsO_4$. But this is unsafe to apply to fruit-trees, being too toxic to fruits and foliage, and as the manufacture of the more basic arsenate is not standardised (as is shown by the analyses given by Smith and Murray and those carried out with the products available in N.Z.), an improvement in this connection is necessary before they can be recommended in orchard practice.

Units of Measurement.

The object of this article is to indicate the units whereby the different arsenates may be measured in order that the orchardist may be able to interpret to his advantage those particulars placed by the manufacturer on the container, in compliance with the forthcoming regulations under the Fungicides and Insecticides Act of 1927.

(1) Percentage of Arsenic Pentoxide.

As the quantity of an arsenate used as a spray is determined largely by the percentage of arsenic contained therein it is important that this be expressed in some standard form. The arsenic content may be given in percentages of arsenic trioxide (As_2O_3), or of arsenic pentoxide (As_2O_5). Although many American manufacturers give this content as arsenic trioxide it is preferable to have it expressed as the arsenic pentoxide, as this is the form in which the arsenic occurs in the spray.

(a) Percentage in Acid Lead Arsenate.—It has been customary to recommend that acid lead arsenate be applied in the Dominion at the rate of $1\frac{1}{2}$ lb. of powder (or 3 lb. of paste) to each 100 gallons of water, since this dosage has proved in the past to give satisfactory control of insect pests without appreciable injury to the tree. This recommendation has been made without regard to the arsenic pentoxide content of the arsenate, consequently it might be thought that considerable variation in results would be secured when different brands were used. Now, the quantity of arsenic pentoxide theoretically present in acid lead arsenate is 33.13 per cent., and analysis of the brands present on this market has shown that the commercial preparations agree closely with this theoretical figure, ranging between 30 and 33 per cent. This variation is surprisingly small and relatively unimportant (for if 24 oz. of lead arsenate powder is the required dosage based on 33.13 per cent. arsenic pentoxide content, then 26.4 oz. would be the dosage required when the arsenic content was 30 per cent.), so adjustment of dosage is unnecessary unless the analysis given

on the package is below this minimum content of 30 per cent. arsenic pentoxide.

(b) Percentage in Basic Lead Arsenate.—A basic arsenate with the formula of $Pb_5(OH)(AsO_4)_3$ has a theoretical arsenic pentoxide content of 23.5 per cent. If this content were used as a measure of dosage, then $2\frac{1}{2}$ lb. of the powder would be required to give comparable results with $1\frac{1}{2}$ lb. of acid lead arsenate powder. Actually, however, it has been determined (Tartar and Wilson, 1915; Cook and McIndoo, 1924) that it requires approximately twice the quantity by weight of the basic salt to give results comparable with acid lead arsenate. It is evident, therefore, that the dosage of basic lead arsenate must be computed on a different basis, and that the arsenic pentoxide content cannot be used alone to assess comparable dosages of acid and basic lead arsenates.

(c) Percentage in Calcium Arsenates.—The arsenic pentoxide content of these sprays ranges between 40 and 44.5 per cent., being much higher than in the lead arsenates. Like basic lead arsenate, the dosage cannot be computed on this unit, since this would indicate that from 1 to $1\frac{1}{5}$ lb. of powder per 100 gallons would be all that is necessary if compared with acid lead arsenate, whereas in practice it has been ascertained that this quantity is only moderately effective in combating chewing insects and is liable to cause severe spray injury. Consequently, until further work has been undertaken with the calcium arsenates, both on their chemistry and toxicity, it is not possible to indicate a satisfactory unit upon which dosage may be based.

(2) Lead Oxide (PbO) and Calcium Oxide (CaO) Content.

The bases lead oxide and calcium oxide are relatively worthless as insecticides, so do not afford a measure of dosage. But it is necessary to know the percentages present in the lead and calcium arsenates, as from them (and the arsenic pentoxide content) can be calculated the $PbO:As_2O_5$ or $CaO:As_2O_5$ ratios necessary to determine the acidity or basicity of each arsenate. Thus the $PbO:As_2O_5$ ratio (by weight) of acid lead arsenate is 1.94:1.0, and that of the basic lead arsenate is 3.23:1.0. Consequently, if the ratio of any brand is above that of the former and below that of the latter this indicates that it is a mixture of acid and basic lead arsenates. The more basic the arsenate the less toxic it is at any given dosage, and in consequence these figures are useful indicators as to the relative toxicity of an arsenate.

The ratios for the calcium arsenates differ according to their basicity, and as there is some uncertainty as to the chemical composition of the more basic calcium arsenates only ratios for the

following can be indicated. Thus the $\text{CaO}:\text{As}_2\text{O}_5$ ratio of the acid salt CaHAsO_4 is 0.48:1.0; that of the tri-calcium arsenate $\text{Ca}_3(\text{AsO}_4)_2$ is 0.73:1.0; and that of the basic $\text{Ca}_5(\text{OH})(\text{AsO}_4)_3$ is 0.81:1.0. According to Smith and Murray (1931) it is not possible to determine these ratios until the excess calcium hydroxide and calcium carbonate added during or subsequent to manufacture is estimated. When these particulars were ascertained for the three calcium arsenates available in New Zealand, it was found that the ratios of $\text{CaO}:\text{As}_2\text{O}_5$ were; Sample E, 0.89:1.0; sample K, 1.04:1.0; and sample N, 0.64:1.0. It is evident, therefore, that these three brands differ considerably in their basicity and, in consequence, in their effects upon insects and plant tissues. This affords another example of the necessity for further investigation into calcium arsenates before their use can be recommended with safety.

(3) Water-soluble Aresnic Pentoxide Content.

As injury to plants is due to the soluble arsenic content it is necessary to use brands in which this has been reduced below a safe maximum amount. In the United States the insecticide regulations require that not more than 0.75 per cent. of water-soluble arsenic pentoxide be present in any arsenate; but this figure is too high for New Zealand, since the

arsenical tolerance of most of our Apple varieties is in the vicinity of 0.2 per cent. Therefore, if an orchardist chooses a brand in which the water-soluble content is below 0.2 per cent., he is scarcely likely to suffer spray injury from this factor. He should experience little difficulty in this respect, as analyses of the commercial arsenates available within New Zealand have shown that the water-soluble arsenic pentoxide content ranges from 0.04 to 0.67 per cent., most being 0.2 or less.

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(4) Particle Size.

Although this has received little attention from investigators or manufacturers, particle size must be recognised as a factor affecting the toxicity of an arsenate. This is evident when it is realised that upon this factor depends the amount of an arsenate taken into the gut of an insect by way of the mouth, and also the ability of the arsenate to adhere to fruit and foliage.

Larvae of insects often deliberately reject fragments of plant tissue carrying foreign substances of the nature of

particles of arsenates, even when the latter are many times smaller than their mouth-parts. Although the mouths of freshly emerged larvae of the leaf-roller caterpillar may range between 75 and 100 microns in diameter they are capable of rejecting minute particles of a diameter of 10 microns or so. The relatively high specific gravity of the lead arsenates is likewise a factor indirectly affecting toxicity, as dosage is directly affected owing to the readiness with which coarse particles fall from the surfaces to which they have been applied.

It is customary to express the size of the particles of an arsenate in terms of a certain sized mesh; thus a good quality arsenate is considered to be one in which 97 per cent. of the particles will pass a 200 or 300 mesh. As a 200 mesh would pass all particles less than 74 microns, and a 300 mesh all below 47 microns, it is evident that such units of measurement are comparatively worthless when the particulars set out in Table 1 are considered.

Consequently, at our request the Spray Chemist has elaborated a process whereby it has been possible to measure particles to within much finer limits than is possible by sieving. This process has brought to light many interesting facts regarding particle size of the arsenates available on the New Zealand market, as the table on the next page shows.

Cooper's ARSINETTE

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Table 1.—Particle Size of Commercial Arsenates.
Samples of Arsenates.

Particle Size, in Microns.*	Lead Arsenates.								Calcium Arsenates.		
	A	D	F	H	L	P	Q	R	E	K	N
Above 74 microns	0.1	3.3	2.1	0.1	4.3	1.1	0.4	3.8	0.4	11.4	23.2
Between 74 and 10 microns . .	0.0	1.0	27.0	1.0	1.0	13.0	11.0	10.0	8.0	18.0	27.0
Total above 10 microns . . .	0.1	4.3	29.1	1.1	5.3	14.1	11.4	13.8	8.4	29.4	50.2
Between 10 and 5 microns . .	0.3	3.0	21.0	4.0	7.0	16.0	22.0	13.0	31.0	20.0	11.0
Under 5 microns	99.6	92.7	49.9	94.9	87.7	69.9	66.6	73.2	60.6	50.6	38.8

*A micron is approximately 1/25,000th of 1 in. in length.

This table is significant, for it indicates that most particles present in a good quality arsenate are exceedingly fine. Thus sample A (a colloidal lead arsenate) has 99.6 per cent. and samples D and H (two widely used commercial lead arsenates) 92.7 and 94.9 per cent. respectively of their particles of a size of 5 microns or less.

If it be assumed arbitrarily that 10 microns is the effective maximum for particle size (a reasonable assumption when consideration is given to the particulars outlined), then this affords one possible explanation for the conflicting results secured in the toxicity studies with arsenates. For even supposing they are of the same chemical composition, different brands of lead

or calcium arsenates show considerable differences in particle size, as the table shows, and these must materially affect their relative toxicities.

This factor of particle size may be utilised as some measure of the relative efficacy (other particulars being equal) of the different commercial arsenates; but further work is necessary before it can be utilised as a basis for calculation of the dosage of any particular brand.

(5) Powder versus Paste Arsenates.

Lead arsenates were first available in the form of pastes containing approximately 50 per cent. by weight of water; in recent years the majority have been offered for sale in powder form. Analysis and field trials have shown that the form in which arsenates are sold is immaterial provided equal concentrations, based on dry weight determinations, are used. But as the paste arsenates contain 50 per cent. of water they should be used at double the quantity of the powder, and consequently be sold at half the price. Powdered arsenates have several advantages over the pastes—they may be packed in cheaper containers, concentrations remain constant as evaporation does not occur, and they are easier to remove from the containers and prepare prior to adding to the spray tank.

Calcium arsenate dusts have been used to a considerable extent in the United States, and it has been claimed that they are easier to apply and less toxic to foliage than are the sprays. In New Zealand, however, these materials have proved most disappointing, causing severe injury, giving poor control of insects, and costing several times as much as the sprays.

Toxicity of Arsenates to Insects and Plants.

The degree of insect control secured, and of spray injury experienced, is dependent upon a complex series of interacting factors, of which the more important are outlined below.

Effects of Arsenates upon Insects.—Formerly it was thought that dosage could be computed upon the arsenic content alone, but it has been shown that this is only partially correct, since the effectiveness of the poison depends additionally upon whether the arsenate has a lead or a calcium base and is of the acid or the basic type. Thus recent toxicity studies indicate that it requires approximately twice the quantity of basic lead arsenate to give comparable results with a given quantity of the acid lead salt. Many investigators claim that the toxicity values of acid lead arsenate and the calcium arsenates are about equal, but this opinion is open to criticism on the grounds that little consideration has been given to the basicity of the samples tested. For if the toxicity varies with the basicity of a lead arsenate the same probably applies with the calcium salts.

Before an insect can be poisoned it must take into the gut, and render soluble therein, a minimum lethal dose of arsenic pentoxide. This lethal dose is governed by many factors, for, in addition to those discussed, it is affected by—

The facility with which the arsenate is taken into the mouth;

Absorbed in the tissues of the gut;

The rate at which it is excreted;

The size of the particles and of the mouth-parts;

The quantity applied, and

The thoroughness of the coverage secured.

These factors may vary with the species of insect, the arsenate used, and the spray technique employed; consequently, before improvements are possible in the empirical methods and dosages employed, individual toxicity studies are necessary with each species of chewing insect present in the Dominion.

Effects of Arsenates upon Plants.—Scorching of foliage and russetting of fruits follow applications of arsenates when these are made under conditions that lead to liberation of soluble arsenic

in the spray during its preparation and subsequently. This injury is affected by such factors as the water-soluble arsenic pentoxide content, whether an acid or basic lead or calcium arsenate is employed, the dosage used, the variety to which the spray is applied, the water used, and climatic conditions experienced during and following applications.

Thus, as we have seen, arsenates with a water-soluble content in excess of 0.2 per cent. are liable to induce injury on Apples, since their arsenic tolerance within the Dominion is fairly low in comparison with other regions, such as the United States, South Africa, and Australia. With certain stone fruits—as Peaches, for instance—injury is likely to occur even when the soluble arsenic pentoxide content is as low as 0.04 per cent. (Swingle, 1929).

Acid lead arsenate may be applied with safety (when both dosage and soluble arsenic content are considered) to all varieties of Apples, Pears, Plums, and cherries, but is unsafe to use alone on Apricots, Nectarines, and Peaches.

The quantity of the arsenate employed naturally affects spray injury, as might be expected. In many overseas regions acid lead arsenate may be applied at dosages of from 3 lb. to 6 lb. of powder per 100 gallons of water; whereas in New Zealand the maximum safe dosage appears to be 1½ lb., save in a few favored localities, where 2 lb. may be applied. During the earlier part of the season the foliage will tolerate much heavier dosages than from midsummer onwards, whereas on fruits the converse is the case.

Certain climatic conditions may effect spray injury, such a combination as high humidity and high temperature tending

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to induce leaf and fruit injury. In fact, literature contains numerous references to spray injury resulting from some given set of meteorological conditions, but as any one factor is affected by one or several others, little is to be gained by traversing them.

Finally it may be pointed out that whereas there is little risk of spray injury (when attention is paid to the features discussed) when acid lead arsenate is applied alone at the specified times and strengths, if the application is made combined with lime-sulphur severe injury may follow unless additional precautions are taken. The reason for this has been the subject of considerable investigation, and while we are not proposing to discuss the matter at length here, injury of this type has become so general that it is considered advisable to indicate methods whereby it may be prevented. (Given in the section "Recommendations," following).

Injury of this nature is due to soluble arsenic in some form, liberated as the result of chemical interaction between the arsenate and the lime-sulphur. As a result of the reaction, which occurs only under certain conditions, the mixture turns a characteristic black color (REGARDED BY SOME ORCHARDISTS AS INDICATING A SATISFACTORY MIX), which is due to the formation of lead sulphide, and acts as an excellent indicator that interaction has taken place. Liability to cause injury is increased when a combination spray of this type, in which the black color has appeared, is allowed to stand for some hours. The reaction does not occur when basic lead arsenate or calcium arsenates are employed.

Recommendations.

The following recommendations regarding the use of arsenate sprays are made until such time as further work, now being undertaken at this Station,

enables us to effect further improvements and modification in arsenical spray applications.

Materials.

For general purposes an acid lead arsenate with the following approximate composition is recommended, as this enables applications to be made at the standard dosage of 1½ lb. of powder, or 3 lb. of paste, per 100 gallons of water:—

Arsenic pentoxide content — Between 30-33 per cent.

Ratio of PbO:As₂O₅ — Approximately 1.94:1.0.

Water-soluble As₂O₅—Not more than 0.2 per cent.

Particle size—At least 90 per cent. of particles to be 10 microns or less in diameter.

An arsenate of this composition, at this dosage, may be applied with safety to Apples, Pears, Plums, and Cherries; but for Peaches, Nectarines, and Apricots it is suggested that the dosage be reduced to 1 lb. of powder per 100 gallons of water, and that hydrated lime at 3 lb. per 100 gallons of spray be added to minimise spray injury. A basic arsenate, at the rate of 2 lb. powder per 100 gallons of water, would be preferable, but, unfortunately, a suitable brand is not yet available on this market.

Experiments conducted during the past three seasons have shown that the available calcium arsenates are unsafe to apply alone at dosages of from 1 lb. to 1½ lb. of powder per 100 gallons of water, as they are liable to cause severe spray injury. Injury may be reduced materially by the addition of from 3 lb. to 5 lb. of hydrated lime per 100 gals. of spray, but even then injury is liable to occur, though to a much lesser extent; consequently, until methods have been evolved to render them less toxic to foliage or until improved brands are available, these arsenates cannot be recommended for general orchard applications.

Times of Application.

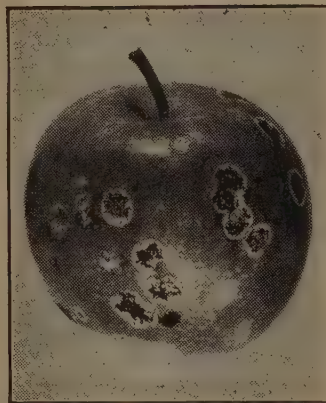
APPPLICATIONS OF THE ARSENATES are times to coincide with the appearance of chewing insects against which they are directed, and thus a knowledge of their life histories, times of emergence, and number of broods materially aids in improving a spray programme. Many of these particulars are as yet unknown; consequently, until they have been worked out, the following tentative applications are recommended, since they are based on successful experiments conducted during the past three seasons throughout the Dominion.

In combating codlin moth, from three to seven applications

are necessary, depending upon locality and season. The first application (the calyx spray) is made at petal-fall with a view to filling the calyx with arsen-



An apple leaf affected with Black Spot.



Granny Smith Apple affected with Black Spot.



ATLANTIC BORDEAUX SPREADER

is the ideal two-purpose spray. Use in proportion of from ½ to 1 gallon to 100 gallons of any compatible spray mixture. After emulsification with an equal quantity of water, Atlantic can be added directly to the prepared spray in the tank, but should be thoroughly mixed before use. Atlantic stabilises the mixture and improves the general quality of the spray. It can also be used for the control of scale and insect pests on citrus trees in the proportion of 1 gallon Atlantic to 50 gallons of water.

ATLANTIC WHITE SPRAYING OIL

Orchardists who prefer a miscible white oil are recommended to use Atlantic White Spraying Oil, for the control of Brown Olive Scale, San Jose Scale, Red Scale, etc. Atlantic White Oil is entirely free from moisture and ammonia and readily miscible with any water. A solution of 60 gallons of water to one gallon of Atlantic will enable you to control scale pests economically and safely.

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Complete Details from
ATLANTIC UNION OIL CO. LIMITED - AUSTRALIA AND NEW ZEALAND

ate so that subsequent entry of larvae at this point is prevented. There is some evidence to show that in certain localities at least this spray is unnecessary, but until further work has been undertaken growers are advised to continue its application. The second spray should be applied ten days later, and subsequent applications should be made at from three-weekly to monthly intervals until danger of infestation is past. In the Auckland Province the pest is more troublesome, and consequently ten-day to fortnightly applications are advisable.

For leaf-roller caterpillar on Apples the programme used against codlin moth is all that is necessary. On stone fruits the first application should be made when the pest first appears, and subsequent applications made as required. With Peaches, Nectarines, and Apricots the dosage should be reduced and hydrated lime added in the manner indicated; but even then a certain amount of spray injury is liable to occur, so that unless the pest is troublesome arsenic sprays should be avoided and control attempted with one or more applications of summer white oil at 1-100.

Bronze beetle may be combated with two close ratio applications when the pest first appears, usually between mid-November and the end of that month, followed by fortnightly applications until the insect disappears. Sprays should be supplemented by clean cultivation and removal of trash around the periphery of the orchard, since this has been demonstrated to be more effective than spraying in combating the pest.

Cherry slug may be combated by one or two sprays, applications being made as soon as the pest appears.

Reduction of Spray Injury.

To avoid injury with the combined lime-sulphur lead arsenate spray the mixture should be prepared in the following manner: Fill the tank with water, and to this add the required amount of lime-sulphur. To the required quantity of lead arsenate add three times its weight of hydrated lime; mix with water to form a thin paste, and pour into the spray tank while the agitator is running. Apply as soon as possible after mixing.

Those desirous of using calcium arsenate or acid lead arsenate on Peaches, Nectarines, and Apricots are advised to use not more than the quantities recommended, and to add to the arsenate, prior to placing in the spray tank, from 3 lb. to 5 lb. of hydrated lime for each 100 gallons of water.—"N.Z. Journal of Agric."

"FRUIT WORLD" APPRECIATED.

Messrs. Reilly's Central Produce Mart Ltd., Dunedin, New Zealand, state:—"Your paper is a very fine publication and of considerable interest to our business."

Selling Fruit by Auction

W. A. Finds it Satisfactory

IN PERTH, Western Australia, the erection of the new metropolitan markets, has not only made the selling of fruit more uniform, but is admitted by the growers to be the very best method of disposing of their production.

In earlier days, private treaty was tried, but the commission agents and merchants were so scattered about the city that a duplication in both delivery by the growers and buying by the retailers was experienced. Now all the markets are centralised under one huge roof, the grower drops his vegetables at one door, his fruit at another, his eggs and poultry at another, and his time is thus saved and his mileage materially shortened.

The same method applies to the retailer who buys for his own fruit and vegetable shop or handy-food store, whilst the large buyer who may buy for the chain stores or for many small individual shops on a commission basis finds that he can get through his buying much more quickly than before the metropolitan markets were established.

Statistics show that the grower gets a better price

for his products under the existing system than here-to-fore, and whether his cases are despatched by rail, by road per his own transport, or by the many road-transport companies still operating, all supplies come to the central market and are accorded equal treatment.

This does not mean that there is only one general floor. Space is leased by many selling agents, and auction sales are held either simultaneously or are spread by mutual arrangements of the auctioneers and buyers move about as they feel disposed, buying the line of produce which they require. This applies equally satisfactorily in both fruit and vegetable sections, yet the area to be covered is comparatively restricted.

Wide Range of Produce.

And what a versatility of primary produce is represented in the markets. Even fish and carcass meat come into the picture. Vegetables in cases, sacks or in heaps upon the clean floors, fruit cases from every part of the State, potatoes and vegetables from Wanneroo, Spearwood, and nearby damp lands, citrus or stone fruits, according to the season from the nearby hills, Apples from Bridgetown or Karragullen, all have their appeal to the needy buyer.

Bells Announce the Auction.

But what a medley of noises! Bells, bells, bells! Cracked bells, deep-throat-

ed bells, small bells, large bells—all call attention to the auction sales about to commence on the various floors. It reminds one of Covent Garden in London or the famous Crawford Markets in Bombay. All is excitement, yet with an orderliness that is not apparent to the uninitiated. What a babel! Can this be Australia? The Cockney dialect is pronounced, but there are also heard the soft modulations of Italian or Greek vendors or the staccato monosyllables of the Chinese gardeners or buyers.

Cases on Roller Conveyors.

The buyers take their seats upon the arena—like tiers of seats as the cases come down the rollers. "One to B.P., two to A.K., three to Pete," calls the auctioneer, and that line is sold. Across the rollers the little bespectacled auctioneer says: "What do you say five—the line, against you M.L., is there five and three anywhere?" and the sale goes on. It is remarkable how quickly the sales are conducted as the rich fruit is inspected and sold as the rollers hurry it past the buyers.

Ever and anon, especially between the ringing of bells announcing the commencement of another sale on an adjacent floor, there is a drift towards the markets' cafeteria, where a hurried cup of coffee or "two straight up on toast" claim the attention of buyers or growers who left home before daylight in order to unload before the sales commence.

Delivery to Buyers.

The big two-ton truck and the horse cart compete for position at the delivery doors of the various auction floors, collecting the purchases of many buyers and rushing them off to grace the windows of the fruit shops or the carts of the itinerant hawk to contribute to the appetite of thousands of city and suburban dwellers, and so the fresh fruit is handled with care and despatch between the grower and the consumer.

The original plans of the metropolitan markets allowed for open-market provision in which growers could sell their produce direct to both wholesale and retail buyers, but the grower now prefers to drop his cases on the auction floor, receive his cheque by mail within three days and save his valuable time, so that now that method has gone into discard and the auctioning of his various commodities of produce has become the almost universal method in Perth.

Small Boy: "Father, what's a committee?"

Father: "A committee is a body that keeps minutes and wastes hours!"

THE AUSTRALIAN FRUIT INDUSTRY

Interesting Story of its Development.
Much Credit is Due to Far Seeing Pioneers

*Fruit will be Specialised at the Centenary
Royal Show, Melbourne, October 18 to 27, 1934*

THE AUSTRALIAN FRUIT INDUSTRY has developed from humble beginnings to one of considerable magnitude. The industry is of importance in supplying the essential article for the health of the people, and in bringing revenue to the country by means of export trade.

Last season, 5,380,172 cases of Apples and Pears were exported.

Over 65,000 tons of dried fruits, and canned fruits reached the record of 1,300,000 cases, nearly doubling the previous year's volume.

The earliest records of fruit tree and vine planting show that in 1788, Governor Arthur Phillip planted Apples, Oranges, Figs, Pears and Grape-vines at Port Jackson from seeds and plants brought from Rio de Janiero and the Cape of Good Hope.

It is reported that in 1792 Lieutenant Bligh planted Apple trees at Bruny Island, Tasmania.

Any visitor to northern Tasmania to-day can see the trees planted in 1838 or 1839 by Lady Franklin, wife of Sir John Franklin, then Governor of Tasmania. These trees were planted at York Town, West Tamar, and, although neglected, still yield good crops of fruit. The trees were imported from England. There are several varieties, not all of which are known, but they certainly include Alfriston and Stone Pippin.

The foregoing information is included in a report recently prepared by Mr. J. M. Ward, Superintendent of Horticulture for Victoria.

Continuing, Mr. Ward states—

As John Pascoe Fawcner propagated Apple trees in Launceston prior to the advent of Sir John Franklin in Tasmania, importations earlier than those brought in by Lady Franklin must have taken place.

Victorian Fruit Industry.

The dawn of fruit culture in Victoria began with the visit of Lieut. Grant, who came out for survey in 1800-1. Grant brought with him various seeds supplied by John Churchill, of Dawlish, England, and also some Apple seeds, given him by Lady Elizabeth Percy.

In 1834 Edward Henty sailed from Launceston, Tasmania, and nearly five weeks later, landed at Portland, Victoria, in November. He brought with him a number of fruit trees, which he obtained from John Pascoe Fawcner's nursery at Windmill Hill, Launceston, Tasmania. These were planted on his arrival, and very soon bore fruit. It may be interesting to note that these trees were lifted in the spring of 1834, and after a period of five weeks, in a warm spring, were planted at the original homestead at Portland, where they were successfully established. One



A GROUP OF SOME APPRECIATED VICTORIAN ORCHARDISTS WHO HAVE SERVED THE INDUSTRY.

Back Row (left to right)—Messrs. R. Mair (deceased), Tyabb; O. Fankhauser, Burwood; Hon. H. Keck, M.L.C., Bendigo; Phillip Pullar (deceased), Ardmona; F. W. Vear, Healesville; J. H. Lang, Harcourt.
Front Row (left to right)—A. E. Thiele, Doncaster; C. C. Lawrey, Diamond Creek; J. B. Brewer, Burwood; John Tully, Doncaster; S. Whitten (deceased), Doncaster.

Bordeaux Sprays

Prepared from

E S A Bluestone

Prevent and Control Fruit Disease

ORCHARDISTS !

Is Your Fruit Clean and of First Grade Quality?



Spraying to prevent disease is your only insurance.
Bordeaux when prepared from high grade Bluestone and Lime is the principal fungicide
for fruit disease control.

E S A BLUESTONE

which is guaranteed to be not less than 99 per cent. pure is the ideal Bluestone for the job.

It is entirely of AUSTRALIAN manufacture,

— Produced by —

The Electrolytic Refining and Smelting Company of Australia Limited
At its Works PORT KEMBLA, N.S.W.

MELBOURNE OFFICE:

Collins House, 360 Collins Street, Melbourne, C.1.

Agents for All States:—MESSRS. ELDER, SMITH & CO. LTD.

SYDNEY OFFICE:

25 O'Connell Street, Sydney.

OBTAIN OUR BOOKLET—"Better Yields by Spraying with ESA BLUESTONE."

of the varieties planted by Mr. Henty was known as "Lawrence's Pet" (this was probably the "St. Lawrence").

In 1837 John Pascoe Fawcner landed in Melbourne, bringing with him from Tasmania 2,500 fruit trees from his Windmill Hill nursery. These, like those



Hon. L. M. Shoobridge, M.L.C., Tasmania, as we knew him thirty years ago, always a generous helper of the fruit industry and worker for Interstate unity.

of Henty's, were lifted in the late spring and brought over the Straits on a journey of five weeks. Fawcner planted these trees on the south side of the Yarra, somewhere between what is now Princes Bridge and the old Emerald Hill (South Melbourne).

Later on, Fawcner settled at Pascoe Vale, and advertised in the local press that he had fruit trees for sale, so that he must be considered as Victoria's first nurseryman, and he was probably the



The late Sir Henry Jones of Tasmania, who rendered good service to the Island State.

first one to propagate and sell fruit trees in Tasmania. Thus Tasmania may claim that the Island State is the pioneer of the Apple industry of Australia.

The first seedling Apple of which there is a definite record was raised by Daniel

Bunce, the botanist and explorer. It was Bunce who married first, Lady Franklin's cousin, and later, Pelomena Batman, daughter of John Batman. Bunce became Director of the Geelong Botanic Gardens, and there raised an Apple, which in 1872 he sent to the Burnley Gardens, named after himself. Bunce is stated to have raised this 20 years before. The Apple is still retained in the collection at Burnley Gardens. Bunce advertised trees and seeds for sale in 1841.

Probably the most notable and successful of all Victorian fruit raisers were the members of the Cole family. T. C. Cole established a nursery about 1845 on the Yarra bank near the Victoria-street bridge. His son, J. C. Cole, took charge of this nursery, which he controlled for many years. T. C. Cole removed to Hawthorn, and established the Shoreland Nursery, managed by and under the name of H. U. Cole. The early Haw-



The late Geo. Griffith of Somerville, Vic. A pioneer fruitgrower and nurseryman and leader of industry.

thorn nursery was named Twyford. These nurseries have given us many fruits, some of which are still grown as commercial varieties. Notable among Apples is Shoreland Queen.

Whilst our Apple trees for early plantings were imported varieties from England, it is worthy of note that some of the best kinds now produced here are Australian-raised seedlings, such as Granny Smith (raised in N.S.W.), Dunn's, also known as Munroe's (raised in Sth. Aust.), Stewart's, Statesman, Rokewood (Victoria), Crofton, Tasma (Democrat) and others in Tasmania.

In addition to the foregoing there are a large number of other well-known varieties raised in the various States. All are chance seedlings, as are the best commercially grown Apples in other parts of the world.

Tasmania's Enterprise.

To the Huon Valley, in Southern Tasmania, must be given the credit of establishing and maintaining the oldest commercial orchards in Australia. From what can be gathered, the first Apple trees of the Huon were planted in 1843 by the late Thomas Judd, whose example was followed by the late Silas Parson, at the Grove; another who, dur-



Mr. Fred Thiele of Doncaster. A pioneer grower and one of the most experienced horticulturists in Australia.

ing the forties and fifties of the last century, planted along, or near the banks of the Huon River, was the late William Barnett, of Franklin. The trees in this orchard are still producing splendid crops (up to 20 bushels per tree), and the property is now owned and occupied by his grandson, that well-known orchardist, Mr. N. B. Barnett. Then there was the late William Cuthbert, the late Mr. Coleman, the Pages, and a number of other early Apple pioneers, whose descendants are still growing Apples in the Huon district to-day.

Farther down the river, at Geeveston, the late William Geeves planted some Apple trees in the year 1857; this pro-



The late H. H. Hatfield of Box Hill, Vic. An expert grower and one who took a prominent part in growers' interests to advance the industry.

perty is now occupied by Mr. R. Geeves. The varieties planted by these early pioneers included Windsor Pippin, Ribston Pippin, Scarlet Nonpareil (better known in Tasmania as Scarlet Pearmain), Reinette du Canada (called Blenheim Orange in Tasmania), French Crab, Stone Pippin, Mobb's Codling, Al-

(Continued on page 563.)

Fruit Cool Storage

Stabilising Effect of Spreading Sales by Means of Cool Storage

Development of Cool Stores at Canneries. :: Cool Stores on Individual Orchards are an Asset.

THE COOL STORAGE of fruit has proved to the fruit industry that no progressive fruitgrowing district can claim to be complete without its own cool store—whether for storage extending over several months, pre-cooling for over season or interstate trade, or holding for factory requirements.

It is claimed with the utmost confidence that cool storage has been the biggest factor in developing the fruit industry.

Recent experiments at the Municipal Markets, Sydney, have shown that all fruits can be successfully cold stored—including Strawberries and Cherries. In addition, vegetables of all kinds are good subjects for cool storing, thus spreading markets to prevent gluts. Certain conditions are necessary besides correct temperature, i.e., careful packing and handling, also post cooling to gradually raise the temperature before placing the products on the market.

Among the more recent developments in cold storage, the activities on the Murrumbidgee Irrigation areas are worthy of note. Messrs. R. Werner & Co. Pty. Ltd., of Richmond, Victoria, were the successful tenderers for the pre-cooling equipment at Leeton and Griffith.

The plants are as follow:—Griffith Producers' Co-op. Co. Ltd., 10,000 case capacity to precool 5,000 cases daily, in six chambers with a total of 70 tons of refrigeration to be applied. Leeton Cannery, 30,000 case capacity with an output of 5,000 cases per day in ten chambers, refrigerating capacity 100 tons.

The system used in these pre-cooling plants is a new one to fruit storage, and comprises a combination of direct expansion and air circulation individual to each chamber and is based on modern practice of quick-moving air through the stacks of cases.

The contracts for the entire jobs: building, insulation, power machinery and refrigerating plant, were secured by R. Werner & Co., and will be in operation for the forthcoming fruit season.

While cool storage has been established in all the Australian States, it has remained for the State of Victoria to attain the greatest development, there being now cool storage capacity for over 11 million cases of fruit. The other States, also the Dominion of New Zealand have not been slow to realise the importance of cold storage for fruit and to provide the necessary equipment.

In the various orchard centres the cool stores are mostly co-operatively owned—in very many instances the initial capital was provided by the Government, with suitable arrangements for payment of interest and the paying off of the principal.

Wherever possible cool stores have been erected alongside railway stations—for in addition to the cool storing facilities, packing equipment is provided, thus making the store a centre of district activities.

Apart, however, from these established district cool stores, growers are showing much interest in a new line of activity—that of having a cool store on the individual property. These orchard cool stores range from a capacity of 1,000 to 15,000 case capacity.

Where such orchard cool store plants have been installed, the owners have proved their value. Growers state that

One grower recently stated that his records showed that it cost him less to run his own cool store on crude oil than it cost him to operate his motor truck between his orchard and district store.

With a cool store on an orchard property, the new features have greatly reduced labor and running costs. The automatic controls, in particular are greatly appreciated.

An orchard property possessing a cool store moves up to a new set of values.

Cool storage has now been proved to be a necessary part of cannery equipment. Pears, after being placed in cool store ripen evenly, thus allowing the work of canning to proceed smoothly. Peaches and various soft fruits have a considerable storage life, scientific experiments having given helpful results. The Shepparton Cannery has just com-



6,000 CASE FRUIT STORE.

savings are effected because of not being compelled, perhaps at an inconvenient time, to cart the fruit over indifferent roads to the district cool store. This by no means discounts the value of the district cool stores, but it demonstrates the desirability under certain circumstances of orchard cool stores being erected in particular localities to suit specific needs.

With regard to these small cool stores on orchards, it is interesting to know that small stores from 5,000 to 10,000 cases can be built and equipped for an all-in figure of round about 6/- per case.

Running costs in one particular instance, using crude oil power, are reckoned to be a little over one penny per case for the season for power and lubricating oils.

menced building on a 30,000 case extension to their existing store. This new section of their store will be available for pre-cooling Pears for export. A 40-ton refrigerating plant is being installed by R. Werner & Co. at this new store.

At the country canneries cool storage equipment has proved valuable for the pre-cooling of Peaches, a very necessary procedure for dealing with the interstate and export trade.

At the Royal Agricultural Show to be held at Melbourne from October 18 to 27, Messrs. R. Werner & Co. Pty. Ltd. have their usual interesting exhibit at the corner of McCracken-avenue and Lobb-street. Enquiries will be gladly answered.

"HARVEY" IMPLEMENTS

Recognised as the Standard and Most
Efficient on the World's Market To-day

Another "HARVEY" Production

"Harvey" Beetle Back Citrus Cultivator

Specially designed to work right under the limbs up to the trunks of the orange and lemon trees. Will lift limbs loaded with fruit off the ground, cultivating to any predetermined depth and then gently putting back in position the fruit bearing limbs without injuring the fruit or fibrous roots. Cuts out all weeds without clogging. It crawls under the branches similar to a beetle, hence the name "Harvey" Beetle Back Citrus Cultivator.

THE ABOVE CULTIVATOR
MAY BE FITTED WITH:

CITRUS DISC ATTACHMENT WITH HOOD.
SPRING TYNE ATTACHMENT WITH HOOD.
FURROWING ATTACHMENT WITH HOOD.

Each disc on this machine is mounted on a separate dust-proof bearing fitted with Alemite greasers—each disc is adjustable without removal to more or less breast cut and each disc can be swung around to cut either on or off without disconnecting or even removing a bolt.

The BEETLE BACK GANG is carried on two wide tyred depth regulating wheels, hence the discs may be set to cut only an inch deep with a full breast and under cut, therefore acting in the nature of a gang of revolving skimmers.

WHEN IN OPERATION.

The highest point to which the limbs are lifted by the Beetle Back would be less than Nine inches.



The Special Features in the "Harvey" Beetle Back Citrus Cultivator are covered by Patents and are only procurable from the "Harvey" Organisation.

The "Harvey" Beetle Back Citrus Cultivator fitted with Disc Attachment with Beetle Back Hood.

Visitors are Cordially Invited to Visit Our Stand at the ROYAL SHOW
PLUMMER AVENUE (Opposite Entrance Members Stand)

Demonstrating a Full Range of

DISC PLOWS.
REVERSIBLE HILLSIDE
DISC PLOWS.
MOULDBOARD PLOWS.
TRACTOR PLOWS.
ROAD PLOWS.
TRACTOR
CULTIVATORS.
TANDEM DISC
CULTIVATORS.
DRAG HARROWS.
GRASS HARROWS.

ONE WAY ORCHARD
DISC CULTIVATORS.
TWO WAY REVERSIBLE
DISC CULTIVATORS.
OFF-SET TANDEM
DISC CULTIVATORS.
SPRING & RIGID
TYNE CULTIVATORS.
ORCHARD & CITRUS
SPRING TOOTH
CULTIVATORS.

GRAPE & BERRY HOES.
"POTTS" COMBINED
REVERSIBLE VINE HOE
AND REVERSIBLE VINE
PLOW.
NURSERY
CULTIVATORS AND
SCUFFLERS.
ORCHARD HARNESS
SINGLE & DOUBLE.
HORSE & TRACTOR
SUBSOILERS.

MOLE DRAINERS.
FRUIT GRADERS.
PRUNE GRADERS.
APPLE WASHERS.
CITRUS PROCESSING
EQUIPMENT,
DRY AND WET.
DEHYDRATORS.
TOBACCO PLANTERS.
"PETTY" DISC
ORCHARD PLOWS.

IF YOU CANNOT VISIT OUR STAND AT THE SHOW, CALL AT OUR SHOWROOMS.

D. HARVEY, Implement Manufacturer **Box Hill, Melbourne, Aust.**
Showrooms—440 Elizabeth St., Melbourne - 628 Bourke St., Melbourne
Agents All States

“Harvey” Fruit Graders

and PROCESSING EQUIPMENT

Including LATEST METHODS of —————

SOAKING, WASHING, WET SCRUBBING, STERILIZING,
————— DRYING AND DRY POLISHING, etc. —————

Unrivalled for Highest Efficiency

“HARVEY” MODEL
9C.L.I. GRADER, with
Automatic Feed
Hopper & Roller
Sorter Elevator.



“Harvey” Models

— FOR —

Every Requirement

RANGING FROM THE SMALLEST GROWER
— TO THE LARGEST PACKING SHED —

The Patented Special New Type Grading Element on
“Harvey” Graders is adjustable to any size grade desired.
Each grade is adjustable without interfering with the grades on
either side. . . NO BRUISING. . . NO STEM JAMMING.

**Unequalled for Accurate Sizing of Mandarins and Citrus
Fruits, the “Harvey” is indisputably the only grader that
— stands flat Apples on their true grading edge. —**

“HARVEY” Washing Machines entirely remove all spray residue

Special Pear and Lemon Graders in all sizes

PRUNE GROWERS—Write for Particulars of our Prune Graders

D. HARVEY, Box Hill, Melbourne

Representatives:

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Combined Implement Showrooms:
628 Bourke Street, Melbourne.
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NEW SOUTH WALES:

Buzacott & Co. Ltd., 7-11 Market
Street, Sydney.
QUEENSLAND:
Clark & Faucet Ltd., 73 Eagle
Street, Brisbane.

TASMANIA:

Max Geeves Pty. Ltd., Davey Street,
Hobart.
Clements & Marshall Pty. Ltd.,
Launceston.
Harry Murray, Devonport.

LAND CLEARING IMPLEMENTS

**Trewhella Bros. Machines are
Fulfilling a World Demand**

Review of Centenary Royal Show Exhibit

THE old saying that "necessity is the mother of invention" was never more clearly fulfilled than in the present world-wide development of the tree pulling devices invented by Messrs. Trewhella Bros. of Trentham, Victoria.

The firm commenced in Victoria in 1889, first as saw millers. Whilst engaged in this enterprise the necessity arose for adequate equipment for log rolling and handling. As a result the first Wallaby "Jack" was produced in 1891 and a couple of years later the present engineering works were established at Trentham to supply the demand which had sprung up for this first valuable tree pulling equipment.

From that commencement a world-wide business has developed to the credit of Australia and to the satisfaction of those who use Trewhella implements. Trade connections were made in all States and New Zealand and the heavy type "Wallaby" Jacks developed. Early in the new century the "Monkey" type—where the casing moves up the Pillar—were made and these in modified form gained the interest of people with heavy grubbing to do. In 1909 the Birmingham Branch came into being to more effectively handle export markets. During the next couple of years the "Monkey" Grubbers—Horse and Hand power—were commenced.

The style of the firm was changed to a Pty. Coy. at the end of 1912. Since that time further lines have been added, though not closely associated with agriculture. Railway Track Jacks, which had been made since 1906, were supplemented by extra sizes and types. Wood-cased Jacks of improved patterns were listed, while Hydraulic and Screw Jacks also figured amongst the productions. For the sawmiller there was, and still is, the Bench Gauge or Fence, developed in the early stages of the works with later addition of Snatch Blocks, Special Wedges, Hammers, Logging Dogs, etc.

During the peak period of 1929 there were 60 employees; at the present time the employees number 35.

Trewhella implements are in operation throughout the world—from the snows of England and Canada to the tropical heat of the Indian and African Jungles.

There is a surprising range of land clearing implements manufactured by this enterprising firm. Here is a list of some of them:—

- 2½ ton "Wallaby" Jack for log rolling and the lighter kind of lifts;
- 4 ton "Wallaby" Jack for sawmillers, very handy for clearing;
- 6 ton "Wallaby" Jack for slightly heavier lifts;



8 ton "Monkey" Jack for grubbing low down roots and stumps (saves root cutting);

10 ton "Monkey" Jack very powerful—the "King" of grubbing Jacks;

The "Monkey" Grubber—remarkably serviceable as a hand power tree, a stump puller; very good when ground too wet to use an ordinary Jack. Highly recommended for farmers, as apart from tree pulling it can be used as a winch.

The "Monkey" Horse Grubber is the machine for a big grubbing job or the contractor.

Some of the other Trewhella lines include Wood-cased Jack and Pinion Jacks, Sawyers' Bench Gauges, Wedges, Hydraulic and Screw Jacks, Snatch Blocks and Rope Fittings, etc.

The present or prospective fruit grower thus has a wide range of implements from which to choose.

Probably of outstanding value however is the "Monkey" Grubber. It can be operated by hand power, is portable and remarkably efficient. It could be described as a hand power winch especially designed for clearing land. A cable from the drum is attached to the tree or stump—preferably high up—another cable goes to the tail of the machine low down to suitable anchor tree or stump. A few strokes with the handle and the ropes are taut, continuing, the pull increases until the tree or stump comes right out.

The power for the "Monkey" Grubber is obtained by the application of a patented Pawl and Ratchet Gear to a drum, to which the end of a steel cable is affixed. All wearing parts are made of the finest grade hardened forged steel. A strong point of the Trewhella "Monkey" Grubber is its portability. By using the finest steel unnecessary weight has been avoided.

A perusal of the testimonials received by Trewhella Bros. Pty. Ltd. reveals entire satisfaction with the full range of implements by users in Australia, New Zealand, England, Ireland, Canada, India, Africa and elsewhere.

Fruitgrowers in all States need to thoroughly attend to stump pulling and in adequate preparation of the ground for the tree planting. Unless this be done thoroughly there is danger of the development of fungus diseases in the dead and decaying roots.

At the Melbourne Royal Show, October 18th to 27th, Trewhella Bros. Pty. Ltd. will have their usual meritorious display at 98 Smith Street. This stand invariably attracts considerable attention.

Visitors to the Centenary Manufacturers' Exhibition, to be held at the Exhibition Buildings, Melbourne, from Oct 13th to November 11, will also be able to see Messrs. Trewhella's Stand, which is at No. 142, in the Machinery annexe.



*Delicious—
tempting!*



FRUIT that buyers want, fruit that brings the best prices, can only come from the healthiest trees. To make sure that your trees are as healthy and as productive as they can be, spray them with Gargoyle Spraying Oils.

These oils are not only the most lasting and effective protection against scale and insect pests, but are also an "emollient"—their correct oil base having a very beneficial effect on the bark, giving it elasticity and promoting the free-flow of the sap. Thus Gargoyle Spraying Oils are doubly-effective from the point of view of tree health. Their use means more and better fruit, and better prices.

Gargoyle RED Spraying Oil is the "dormant" season spray; Gargoyle WHITE Spraying Oil is the spray for citrus trees and for the leafy period of deciduous trees. They are Made in Australia.



Gargoyle Spraying Oils

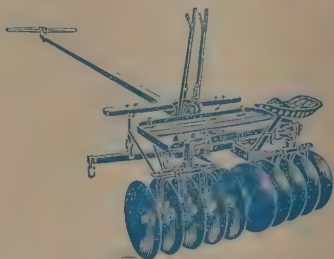
VACUUM OIL COMPANY PTY. LTD.

M 37

SUNSHINE AND MASSEY HARRIS

Implements and Machines for farm, orchard, vineyard, and pasture improvement, are outstanding in quality, dependability and service. Users can tell you, and it costs nothing to get details of construction, prices and terms. Ask the local agent, or write to us for a catalogue. We post it—free.

THE SUNPEARL — Reversible — for in-throw or out-throw



Strong, well-balanced and light in draught—for orchard work, row crops, and light field work. Has levers to alter cut to any workable angle. Discs in two gangs, extensible for any gap up to two feet. Sizes:—8, 10, and 12-disc—4 feet, 5 feet, and 6 feet cut respectively.

H. V. McKay Massey Harris Pty. Ltd.

SUNSHINE HARVESTER WORKS
Sunshine, W.20 ∴ Victoria

A COMPLETE LINE,

INCLUDING—

Harvesting Machines
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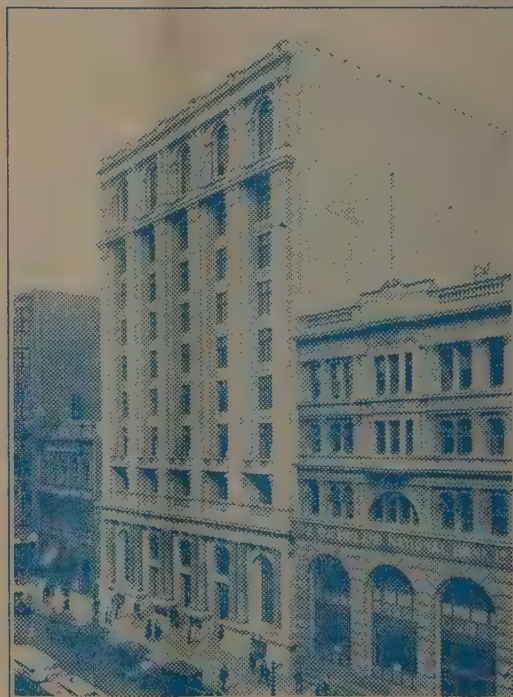
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friston, Dumelow's Seedling (Wellington), Gooseberry Pippin, Sturmer, and other old English varieties.

Other Tasmanian districts, such as the Kangaroo and Derwent Valleys, Lilydale and Glenorchy, followed the lead given by the Huon, and in later years plantings were extended to other parts, including the Tamar and Mersey Valleys, the Channel, Peninsula, and other districts. Most of the trees planted in the early commercial orchards are still yielding excellent crops, indeed, Apples from these old trees are every year exported to the United Kingdom and to the Continental markets.

Victoria followed Tasmania's lead and odd small orchards were planted adjacent to Melbourne from about the year 1840 and onwards.

Robt. Whatmough established an orchard in the Heidelberg and Greensborough districts, and gradually, as certain districts were found suitable for fruit trees, further commercial plantings took place. The varieties of the early Victorian orchards were practically the same as those planted in Tasmania.

Apples in N.S.W.

Apple orchards were not planted to any extent in New South Wales in the early days of the settlement of that State, but later on a number sprang up in the coastal districts in the vicinity of Sydney, where early-maturing varieties were grown. The Apple markets there were for a long while mostly supplied from Tasmania and Victoria. In

later years, however, commercial Apple districts were planted in a number of localities in different parts of that State, north, south, and west of Sydney. The Murrumbidgee irrigation districts, and several non-irrigated districts in New South Wales, are to-day producing high-grade Apples.

In Queensland,

practically the only Apple areas are in the Stanthorpe district, which is in the south-eastern part of that State, at an altitude of some 3,000 feet above sea-level. The Jonathans, Gravensteins, Granny Smith, and Delicious grown there are equal to those produced in any other part of Australia.

One or two small orchards have been planted in the Herberton district, which is the far north of Queensland, some 70 to 80 miles from the coast, and approximately 3,000 feet above sea-level, but the climatic conditions are such that good quality Apples cannot be expected.

I have no information regarding early plantings in South Australia. Most of the orchards there, even to-day, are in the hill country within a radius of 50 or 60 miles of Adelaide.

Development in W.A.

The last Australian State to become a producer of Apples was Western Australia. It is only during the last 20 or 25 years, particularly within the last 15 years, that Apples have been grown there on a commercial scale.

As an exporting State, Western Australia has come to the forefront very

quickly, and Apples from there are probably more favorably known in England than those from any other State. The chief reason for success in this direction is that the growers there had nothing to forget, and profiting by the experience of orchardists in the older States, started on the right lines, planted the varieties most suitable for shipping and most favored in the overseas markets, and, further always took the precaution to see that fruit intended for export was graded and packed in the way most approved in the countries to which it was being sent.

PACKING TO COUNTS.

The sale of Apples, Pears and Peaches by number instead of by weight is undoubtedly coming, and growers will be required, in their own interests, to pack their fruit by the recognised count method.

The change-over from size to count will not be as difficult as growers might imagine, the "Lightning" Fruit Grader Co. having invented a grader with fractional adjustment for each section, especially for this purpose. The idea is stated to be an absolutely new one, and a brief description is given in their advertisement on the front cover, while the machine itself is being demonstrated at their exhibit at the Melbourne Show, together with other types of graders, and a most comprehensive line of specialised orchard implements.



Group of Fruitgrowers at a Victorian Conference several years ago. Some of the delegates in this picture have since passed away.

Fruit Blossoming Dates

Apples, Pears and Cherries

IN RESPONSE to a request from a reader in Western Australia, we are republishing herewith a list of the approximate Victorian blossoming dates of Apples, Pears and Cherries, from Bulletin No. 58, Victorian Department of Agriculture.

Readers are asked to check over these dates and to sub-

mit to the Editor approximate blossoming dates of other important varieties.

This information is important in the light of the necessity for cross-pollination.

It should be noted that the dates on which varieties bloom vary from seven to ten days, according to weather conditions prevailing at the time.

Blossoming Dates of Apples.

Variety.	Districts.							
	Bendigo.	Diamond Creek.	Doncaster.	Evenlyn.	Goulburn Valley and North-East.	Maryborough.	Metro-politan.	Western.
Adam's Pearmain	Oct. 28	..	..	Oct. 12	Oct. 31	Oct. 22	..	..
Alfriston . . . . .	..	..	..	Oct. 10	..	..	..	..
Allington Pippin . . . .	..	..	..	Oct. 10	..	..	..	..
Allsopp's Beauty . . . . .	..	..	..	Oct. 16	..	..	..	..
Anne Elizabeth	Oct. 28	Nov. 6	Nov. 5	Oct. 10	Oct. 26	Oct. 20	..	..
Ballarat Seedling . . . . .	..	..	..	Oct. 15	..	..	..	..
Baldwin . . . . .	..	..	..	Oct. 3	..	..	..	..
Beauty of Bath . . . . .	..	..	..	Oct. 16	..	..	..	..
Ben Davis	Oct. 4	..	..	Oct. 25	..	..	..	Oct. 20
Black Ben Davis . . . . .	..	..	..	Oct. 5	..	..	..	..
Blenheim Orange . . . . .	..	..	..	Oct. 8	..	..	..	..
Buncombe	Oct. 28	Oct. 30	..	Oct. 18	..	Oct. 20	..	Oct. 31
Champion . . . . .	..	..	..	Oct. 20	..	..	..	..
Cleopatra	Oct. 18	..	..	Oct. 17	Oct. 6	Oct. 12	..	Oct. 17
Commerce . . . . .	..	..	..	Oct. 12	..	..	..	Oct. 22
Cox's Orange Pippin	Oct. 12	Oct. 17	..	Oct. 12	..	Oct. 6	..	..
Crow's Egg . . . . .	..	..	..	Oct. 5	..	..	..	..
Delicious	Oct. 18	..	..	Oct. 13	..	..	..	..
Dougherty . . . . .	..	Oct. 19	Oct. 18	Oct. 20	..	..	..	..
Dumelow's Seedling	Oct. 4	Oct. 18	..	Oct. 18	Oct. 10	Oct. 6	..	..
Dunn's Seedling	Oct. 4	Oct. 10	Oct. 13	Oct. 8	Oct. 11	Oct. 6	Oct. 11	..
Emperor Alexander	Oct. 4	Oct. 22	Oct. 17	Oct. 18	..	..	..	..
Esopus Spitzenburg	Oct. 4	Oct. 21	Oct. 19	Oct. 16	..	Oct. 22	..	Oct. 20
French Crab	Oct. 18	..	..	Oct. 12	..	..	..	Oct. 1
Gladstone . . . . .	..	Oct. 12	Oct. 16	Oct. 16	..	..	..	..
Gloria Mundi . . . . .	..	..	..	Oct. 20	..	..	..	..
Gooseberry Pippin	Oct. 18	..	..	Oct. 15	..	..	..	Oct. 16
Granny Smith . . . . .	..	..	..	Oct. 19	..	..	Oct. 9	Oct. 20
Gravenstein	Oct. 11	Oct. 16	Oct. 13	Oct. 14	Oct. 12	..	..	..
Hoary Morning	Oct. 12	..	Oct. 18	Oct. 20	..	Oct. 22	..	Oct. 25
Hoover	Oct. 28	Oct. 5	Oct. 24	Oct. 20	..	..	..	Nov. 5
Irish Peach	Oct. 4	Oct. 11	..	Oct. 14	Oct. 11	Oct. 6	..	Oct. 8
James Grieve . . . . .	..	..	..	Oct. 20	..	..	..	..
Jonathan	Oct. 18	Oct. 18	Oct. 16	Oct. 17	Oct. 10	..	..	Oct. 18
Kentish-Fillbasket	Oct. 4	..	..	Oct. 5	..	..	..	Oct. 15
King David . . . . .	..	..	..	Oct. 13	..	..	Oct. 10	..
King of Pippins . . . . .	..	..	..	Oct. 15	..	..	..	..
King of Tomkin's County . .	..	..	..	Oct. 4	..	..	..	..
Lady-Carrington . . . . .	..	..	..	Oct. 18	..	..	..	..
London Pippin	Oct. 28	Nov. 3	Nov. 1	Oct. 27	Oct. 31	Oct. 20	..	Nov. 7
Lord Nelson . . . . .	..	..	..	Oct. 7	..	..	..	..
Lord Suffield	Oct. 4	Oct. 20	Oct. 15	Oct. 13	..	..	..	..
Lord Wolseley	Oct. 28	Oct. 22	..	Oct. 25	..	..	..	..
Magg's Seedling . . . . .	..	..	..	Oct. 11	..	..	..	..
Maiden's Blush . . . . .	..	..	..	Oct. 10	Oct. 17	..	..	..

Blossoming Dates for Apples.

Variety.	Districts.						
	Bendigo.	Diamond Creek.	Doncaster.	Evenlyn.	Goulburn Valley and North-East.	Maryborough.	Metro-politan. Western.
McIntosh Red . . . . .	..	..	..	Oct. 7	..	..	Oct. 9
Mellon's Seedling	Oct. 18	..	..	Oct. 10	..	Oct. 12	Oct. 31
Mona Hay . . . . .	..	..	..	Oct. 1	..	..	..
Moss' Incomparable . . . . .	..	Oct. 24	..	Oct. 16	..	..	..
Newtown Pippin	Oct. 18	..	..	Oct. 10	..	..	Oct. 13
Nickajack	Oct. 28	Oct. 26	..	Oct. 12	..	Oct. 20	..
Northern Spy	Oct. 26	Oct. 23	..	Oct. 18	Oct. 19	..	Nov. 1
Peasgood's Nonsuch . . . . .	..	Oct. 20	..	Oct. 25	..	..	..
Pioneer . . . . .	..	..	..	Oct. 12	..	..	..
Pomme de Neige	Oct. 24	Oct. 12	Oct. 12	Oct. 16	Oct. 12	Oct. 12	..
Prince Bismark	Oct. 4	Oct. 15	..	Oct. 14	..	Oct. 6	Oct. 15
Red Astrachan	Oct. 18	..	..	Oct. 12	..	..	Oct. 8
Reinette du Canada	Oct. 18	Oct. 21	Oct. 18	Oct. 1	Oct. 22	Oct. 12	Oct. 18
Rhode Island Greening . . . . .	..	..	..	Oct. 1	..	..	..
Ribston Pippin	Oct. 4	..	Oct. 12	Oct. 14	..	..	Oct. 9
Rokewood	Oct. 15	Oct. 20	Oct. 25	Oct. 16	..	Oct. 12	Oct. 20
Rome Beauty	Oct. 28	Nov. 5	Nov. 3	Oct. 27	Nov. 3	..	Nov. 7
Rymer	Oct. 18	Oct. 21	Oct. 20	Oct. 21	Oct. 18	Oct. 12	Oct. 26
Scarlet Nonpareil	Oct. 10	..	..	Oct. 4	Oct. 12	Oct. 12	Oct. 20
Scarlet Pearmain . . . . .	..	..	..	Oct. 18	..	..	..
Schroeder's Seedling	Oct. 18	..	..	Oct. 13	..	..	..
Senator . . . . .	..	..	..	Oct. 16	..	..	..
Sharp's Early . . . . .	..	..	..	Oct. 2	..	..	..
Shepherd's Perfection	Oct. 13	..	..	Oct. 8	Oct. 10	Oct. 12	..
Shockley	Oct. 18	..	..	Oct. 13	Oct. 15	..	Oct. 20
Shoreland Queen . . . . .	..	..	Oct. 6	Oct. 10	..	..	..
Statesman . . . . .	..	..	Oct. 22	Oct. 22	..	..	..
Stayman Winesap . . . . .	..	..	..	Oct. 24	..	..	..
Stewart's Seedling . . . . .	..	..	..	Oct. 15	..	Oct. 12	..
Stone Pippin	Oct. 18	Oct. 21	Oct. 18	Oct. 22	Oct. 20	..	Oct. 22
Sturmer Pippin	Oct. 13	Oct. 19	..	Oct. 19	Oct. 16	Oct. 12	Oct. 24
Twenty Ounce . . . . .	..	..	..	Oct. 13	..	..	..
Wagner . . . . .	..	..	..	Oct. 7	..	..	..
Wellington . . . . .	..	..	..	Oct. 15	..	..	..
Williams Favorite . . . . .	..	Oct. 21	Oct. 23	Oct. 22	..	..	..
Winesap . . . . .	..	..	..	..	Oct. 24	..	..
Winter Majetin	Oct. 28	Oct. 28	Oct. 30	Oct. 25	Oct. 17	..	Nov. 2
Winter Strawberry . . . . .	..	..	..	..	..	..	..
Worcester Pearmain . . . . .	..	..	..	Oct. 25	..	..	Oct. 10
Yates	Oct. 12	Oct. 15	Oct. 12	Oct. 14	Oct. 17	Oct. 12	..

Blooming Dates for Pears.

Variety.	Districts.						
	Bendigo.	Diamond Creek.	Doncaster.	Evenlyn.	Goulburn Valley and North-East.	Maryborough.	Western.
Beurre Berckman's . . . . .	..	Oct. 2	..	Oct. 3	..	..	..
Beurre Bosc	Oct. 7	Oct. 10	Oct. 7	Oct. 7	Oct. 7	..	Oct. 9
Beurre Capiaumont	Oct. 7	Sep. 29	Oct. 3	Oct. 3	Sep. 27	Oct. 6	Oct. 3
Beurre Clairgeau	Oct. 7	Sep. 28	Sep. 25	Sep. 29	Oct. 1	Oct. 1	Sep. 22
Beurre d'Anjou	Oct. 7	..	Sep. 25	..	Oct. 1	..	..
Beurre Hardy	Oct. 7	..	..	Oct. 2	..	..	..
Black Achan	Sep. 29	..	Sep. 30	Sep. 28	..	Oct. 6	Sep. 29
Broompark	Oct. 7	Sep. 29	Sep. 28	Oct. 2	..	Oct. 1	..
Brown Windsor	Sep. 29	..	..	..	..	..	..
Clapp's Favourite . . . . .	..	Oct. 4	..	..	..	..	..
Doyenne Boussoch . . . . .	..	..	Sep. 30	Oct. 4	..	..	..
Easter Beurre	Sep. 29	..	..	Sep. 10	..	..	..
Fertility . . . . .	..	..	..	Sep. 28	..	..	..
Flemish Beauty	Oct. 7	..	..	Sep. 4	..	..	..
Gansel's Bergamot	Oct. 7	Oct. 5	Sep. 30	Oct. 1	..	Oct. 6	Sep. 29
Glou Morceau . . . . .	..	..	..	Oct. 9	..	..	..
Golden Beurre . . . . .	..	..	..	Oct. 14	..	..	..
Harrington's Victoria	Sep. 26	Sep. 20
Howell	Sep. 28	Sep. 30	Sep. 21
Jargonelle	Sep. 29	Sep. 29	..	Sep. 22	Sep. 28	Oct. 1	..

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QUERIES

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New South Wales Growers ship through C. Geo. Kellaway & Son, Office 42, City Fruit Markets, Sydney.

Blooming Dates for Pears.

Variety.	Districts.							
	Bendigo.	Diamond Creek.	Doncaster.	Evelyn.	Goulburn Valley and North-East.	Maryborough.	Metro-politan.	Western.
Josephine de Malines		Oct. 4	Oct. 2		Sep. 30	Oct. 4	Oct. 1	Sep. 29
Kieffer's		Sep. 20	Sep. 20	Sep. 16	Sep. 20	Sep. 20	Oct. 1	Sep. 15
Lawrence			Sep. 30					
Le Conte			Sep. 26			Sep. 24		
L'Inconnue		Oct. 7		Oct. 7		Oct. 4	Oct. 12	
Louise Bonne of Jersey		Oct. 4		Sep. 30				
Madame Cole			Sep. 29		Sep. 26			
Marie Louise		Oct. 7		Oct. 4	Oct. 5		Oct. 6	Oct. 5
Napoleon		Sep. 29		Sep. 30	Oct. 1			
Neverfail			Oct. 1	Oct. 1	Sep. 27			
Uvedale's St. Germain		Oct. 7					Oct. 6	
Vicar of Winkfield			Oct. 5			Oct. 4	Oct. 6	Sep. 29
Williams' Bon Chretien		Oct. 7	Oct. 12	Oct. 10	Oct. 9	Oct. 7	Oct. 6	Oct. 5
Winter Cole		Sep. 29	Oct. 2	Oct. 2	Oct. 2		Oct. 12	Oct. 9
Winter Nelis		Oct. 7	Oct. 3	Sep. 30	Oct. 2	Sep. 29	Oct. 6	Oct. 5

The following table, from "The Pollination of Pear Blossoms," by E. E. Pescott, shows the full period of bloom of Pear trees during the season 1910:—

Variety.	First Flowers.	Full Bloom.	Last Flowers.
Winter Nelis	September 24	September 30	October 12
Gansel's Bergamot	" 24	" 31	" 17
Packham's Triumph	" 23	" 28	" 13
Winter Bartlett	" 24	" 30	" 17
Williams' Bon Chretien	" 24	October 1	" 14
Jargonelle	" 24	September 28	" 12
Uvedale St. Germain	" 24	" 29	" 14
Winter Cole	" 24	" 28	" 10
Glou Moreau	" 24	" 30	" 15
Beurre Capiaumont	" 23	" 29	" 13
Beurre Deil	" 24	" 30	" 13

It is equally important to interplant Cherry trees for cross-pollination as it is for Apples, Pears, and Plums.

Blooming Dates for Cherries.

Variety.	District.					Goulburn	Western.
	Bendigo.	Diamond Creek.	Doncaster.	Evelyn.	Valley and North-East.		
Bedford Prolific	Sep. 30	Oct. 3	Oct. 1	Sep. 30	Oct. 2	Sep. 30	
Belle d'Orleans .. . . .	..	Sep. 25	..	..	..	..
Bigarreau de Mezel .. . . .	..	..	Sep. 24	Sep. 21	..	..
Bigarreau Napoleon	Sep. 19	Oct. 10	Oct. 4	—	Oct. 4	Sep. 30	
Bigarreau Reverchon	Sep. 30	..	..	..	..	..
Bigarreau Twyford .. . . .	..	Oct. 5	Oct. 4	Oct. 1	Oct. 1	..
Black Bigarreau	Sep. 30	Sep. 25	..	Sep. 24	..	..
Black Circassian	Sep. 30	..	..	..	..	..
Black Eagle .. . . .	..	Oct. 1	..	..	..	..
Black Tartarian .. . . .	..	..	..	Oct. 8	Oct. 4	Sep. 29
Burgdorf's Seedling	Sep. 19	Sep. 24	Sep. 22	Sep. 19	..	..
Centennial .. . . .	..	..	..	..	Oct. 2	..
Chapman .. . . .	..	..	Sep. 22	..	..	..
Early Lyons	Sep. 24	Sep. 29	Sep. 28	Sep. 25	Sep. 26	Sep. 24	
Early Purple Guigne	Sep. 24	Sep. 26	Sep. 22	Sep. 27	Sep. 24	Oct. 10	
Early Rivers .. . . .	..	..	..	Sep. 25	..	Sep. 29
Eagle's Seedling	Sep. 30	..	..	..	..	..
Florence	Oct. 5	Oct. 7	Oct. 12	Oct. 7	Oct. 2	..	
Hortense .. . . .	..	..	Oct. 6	..	..	..
Kentish .. . . .	..	..	..	Oct. 7	..	..
Late St. Margaret	Oct. 7	Oct. 10	Oct. 8	Oct. 12	Oct. 2	Sep. 29	
Thiele's Seedling .. . . .	..	..	..	Oct. 15	..	..
Waterloo .. . . .	..	..	..	Sep. 30	..	Oct. 15
Werder's	Sep. 19	Sep. 27	Sep. 23	Oct. 1	..	Oct. 10	
Wilk's Seedling .. . . .	..	Sep. 26	Oct. 1	Oct. 3	..	..

Cool Storage In Australasia

Orchardists' and Fruit Cool Stores' Association

The quarterly meeting of the Orchardists' and Fruit Cool Stores' Association was held on August 28, at Melbourne.

There were present: Mr. J. J. Tully, president, in the chair, Messrs. F. Moore (Blackburn, R. Lawford (Blackburn); A. R. Fankhauser, W. Fankhauser, W. Mock (Burwood East); R. Langley (Croydon), F. A. Bloom (Doncaster East), J. H. Lang (Harcourt), G. H. Sprague (Hastings), Aug. Thiele (Orchardists), W. J. Williamson, M.L.C. (Portland), J. G. Aird, H. Pump, W. McKinlay (Ringwood); T. W. White (Somerville), H. J. Willoughby (Tyabb), T. E. Butler (Red Hill and Pakenham), W. P. Hutchinson (V.F.M.A.), and the secretary, H. J. Noonan. Apologies were received from Doncaster West, Pakenham, Mr. L. G. Cole, Mr. F. Petty, and Mr. R. M. Finlay, and Mr. E. H. Hatfield.

Fruitgrowers' Relief. It was resolved that this association favors the distribution of the Fruitgrowers' Relief Grant on the basis of so much per case exported, and that the Department of Commerce be notified to this effect; also that a letter be sent to the V.F.M.A. supporting its efforts to have the distribution made on these lines.

Arbitration Case. Mr. J. G. Aird reported that he had attended at court, and had given evidence in the engine drivers' case, in which a number of affiliated stores were interested. Mr. Mann of the Victorian Employers' Federation, who had appeared for the Cool Stores' Association, had requested that fruit cool stores be exempted from the award. The decision of the court on this question was now awaited.

Fruit in Cool Store. The question of the value of these statistics, as collected by the association at present, was discussed. It was felt by some delegates that these statistics were not a complete guide to the holding of fruit in cool storage in the State, as there were numerous private stores in the metropolitan area and elsewhere, which did not furnish returns of fruit held; further, the opinion was expressed that comparatively few fruitgrowers were in

the position to know the details of the statistics, as they were sent to the secretaries of affiliated stores, and seldom went any further.

After discussion, it was resolved that the Department of Agriculture be asked to collect statistics from every cool store in the State, private and co-operative, such statistics to show the quantity of fruit held in storage at the first of each month.

It was agreed that the association continue to collect statistics as at present until such time as better arrangements can be made.

New Affiliations. The president announced that since the annual conference, the Doncaster West Cool Store, and Mr. A. E. Ireland (private store) had affiliated with the association.

Duty on Red Oil. The Department of Trade and Customs intimated that it was unable to grant any remission of duty on red oil for spraying.

Reduction of Interest. Mr. Moore reported that a deputation, introduced by Col. Knox, M.L.A., and supported by Mr. A. J. Kirton, M.L.A., had waited on Mr. Pitt, the Director of Finance. The deputation had received a sympathetic hearing, and, although Mr. Pitt had pointed out difficulties in the way of a reduction to a rate below $4\frac{1}{2}$ per cent., it was hoped that the Government would grant the request.

Evasion of Fixed Prices by Factories. A letter was received from the Fruit Industry Sugar Concession Committee, stating that "The minimum prices to be paid by factories for fresh fruit apply to delivery to growers' railway siding or country district cannery. Metropolitan processors or processors purchasing fruit from other than their own districts are required to pay freight and cartage from the growers' railway siding."

After discussion, it was resolved that executive confer with the Southern Fruitgrowers' Association as to the best way of protecting growers' interests in their dealings with factories.

Thrips Investigation League. A letter was received from the secretary of the Thrips Investigation League, en-

closing the audited accounts of the league. The letter and statements submitted were considered to be a satisfactory statement of the expenditure of the league. The executive had deferred the matter of a donation to the league's funds owing to the present state of the finances of the association.

Protection of Growers Re Export. The question of protection to growers in respect to proceeds of export consignments was brought up by the Tyabb delegate, Mr. Willoughby, who said that some growers had been unable to collect money due to them on export consignments, owing to the financial failure of agents at this end. Several suggestions were made as to the best way of protecting growers from future losses in this way. The suggestions were (briefly):—1. That proceeds of consignments be paid into a trust account. 2. That present large number of agents be restricted to a smaller number of agents of proven financial standing. 3. That overseas agents establish credit here by means of letter of credit.

It was resolved that the executive bring this matter before the V.F.M.A., and confer with that body as to the best way of achieving the above object.

Sales Tax and Duty on Engine Replacements for Cool Stores. The president reported that the executive had endeavoured to obtain the remission of sales tax and duty on parts supplied to the orchardists and cool stores, but that so far the efforts had been unsuccessful.

The executive was empowered to make further representations to the departments concerned.

Supplies for Cool Stores. A discussion took place on the merits of different brands of ammonia, etc. The president stated that the executive proposed to take up the matter of securing a reduction in the cost of these items to stores affiliated with the association, and hoped to have some definite proposal to put before the next meeting.

Royal Agricultural Show. Delegates were reminded that entries for this show closed shortly and were asked to do their best to persuade their respective stores to stage an entry, as the prizes were substantial, and the advertisement to the industry valuable.

Time of Meeting. It was agreed that in future meetings be held in the afternoons, instead of mornings, as previously.

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Cold Storage of Cherries.

Care Needed in Picking and Packing :: Pre-Cooling :: Cold Storage at 33 Deg. F. Recommended :: Post-Cooling—The Quick Freezing System Described

(By Willis J. Williams, F.C.S. (London), Superintendent of Markets, Sydney.)

CHERRIES ARE GROWN in most of the States of the Commonwealth, the best coming from those districts away from the coast and at an altitude of over 1,000 feet.

The principal varieties marketed are Early Twyford and Early Lyons, red colored berries; Florence, a firm light colored Cherry, probably the best keeper of all, and Marguerite, a fine flavor, red to black in color. Another dark colored fruit is the Noble, which is one of the last to be marketed.

The others appear on the market in the order set down, although it is quite likely that at one part of the season they are all being sold at the same time.

Climatic conditions play a very important part in both quality and keeping of Cherries, a wet season necessitating very quick handling and marketing. In good condition, Cherries cannot safely be left on the floor of the market for more than one week. The best varieties are, undoubtedly, those known as Marguerite and Florence.

Picking and Packing.

Cherries for cold storage must be picked very carefully, so that they will not become bruised. Cherries should

have a decided light color of the ripe Cherry in the skin, but on no account should soft, ripe Cherries be placed in the cold stores unless it is just over night. Immediately they are picked, the fruit should be packed, and in Australia this fruit is packed in 12-lb. boxes with a paper wrapping inside the box.

Precooling.

It is advisable to precool Cherries. This fruit is grown in the districts a long way from the capital cities, out in the mountain areas, where the temperature is generally cool at night even in the summer months. Notwithstanding this fact, the fruit immediately it is packed should be placed in the pre-cooler at a temperature of 50 degrees. The boxes, only holding 12 lbs., it is necessary to keep them in this room for a period of 24 hours, provided the boxes are not stacked too closely together. They can then be placed in the cold storage room. If the cold storage works are in the fruit district, then, after the fruit has been placed in the cold storage room for two to three days, it can be placed in refrigerator cars and sent to the city. If, however, the fruit is not precooled in the country it should be

forwarded to the city in louvered vans at the earliest possible moment when it can be placed on the floor of the market or sent to the cold storage works.

Cold Storage.

Several experiments have been conducted with different varieties, and particular note was taken of the color, flavor, general condition and ripeness. In each case, only cherries of the very best quality were used.

Cherries were placed in store at temperatures of 33, 35 and 40 degrees. It was found that the fruit kept very much better at the lowest temperature. As a matter of fact, the Cherries placed in a temperature of 40 degrees only kept about 10 days; those at 35 degrees for 20 days; while those kept at a temperature of 33 degrees kept in good order and condition for 35 days. The humidity in each case was from 80 to 85 per cent.

Several lots of immature Cherries were placed in various temperatures, but it was found that, at the end of the second week they wilted so badly that they had to be thrown away. This class of fruit did not even sweeten in store.

Cherries that were considered just ripe for eating were experimented with, and these were found at the end of the week to be over-ripe and decay and mould had set in.

The freezing point of the Cherry is 28 degrees Fahrenheit.

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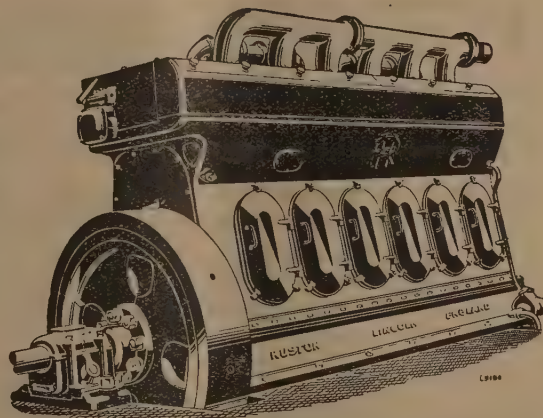
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Post-Cooling.

It is advisable that Cherries should be brought out of the cold storage room into the post-cooler for at least 24 hours before being placed on the market. By experiment, it was found that Cherries directly taken out of the cooler on to the floor of the market lasted for an average of three days, while those that went through the post-cooler lasted four or five days.

Cherries kept at a temperature of 33 degrees for several days, or even three weeks, it can be conceived that it would be far better to take them out of that temperature into a temperature of 50 degrees to 55 degrees for a day before going out on to the market floor at temperatures which might range from 70 to 80 degrees. It has been noted that Cherries, like other fruits and vegetables, are likely to sweat when taken out of a low temperature into a high one, whereas if this fruit is allowed to warm up gradually that sweating will not occur. Hence the necessity of passing the fruit through the post-cooler.

By careful handling and a little better use of the scientific methods that can be employed, a better article will be placed on the market, and one which will keep longer than if such methods were not used.

Quick Freezing.

Experiments in the quick freezing of Cherries were conducted:—(1) Without

syrup; (2) With syrup; (3) Partly cooked fruit. The fruit was frozen at between 5 and 10 degrees, but it would have been better if it had been possible to freeze the fruit very much quicker, which would have been done by using a temperature below zero, but at the time the above temperatures were the only ones available. The Cherries were then stored at 15 degrees Fah.

It was found after four weeks that the fruit, frozen without syrup, was in good order and condition, with the exception that some had become dark.

Then a further experiment was conducted, placing the Cherries in a bottle, with the idea of excluding as much air as possible. In this case, after a month's test, the fruit came out almost free from discoloration.

Cherries were placed in syrup. The syrup was made with about 1 lb. sugar to a quart of water, and in this case the fruit came out in splendid order and condition after a month's trial. The fruit was not placed in the syrup until the syrup was cold.

Cherries were partly cooked, some were placed in syrup and some were without. In both cases, the fruit came out in good order and condition at the end of the month.

Frozen Cherries, within a couple of hours, were cooked, and in each case they were found to be quite acceptable, with a good flavor and color.

Some of the fruit from the above experiments were kept in store, and at the end of six months the results were much the same as at the end of one month, proving conclusively that Cherries could be kept for almost an indefinite period at a temperature of 15 degrees Fah.

Summary.

(1) Care must be used in picking and packing.

(2) Precooling near the orchard is an advantage.

(3) Cherries can be kept up to 35 days at a temperature of 33 degrees Fah and a humidity of 85 per cent.

(4) Post-cooling should be insisted on.

(5) Cherries can be kept indefinitely in frozen temperatures.

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SOUTH AUSTRALIA.

Mid-Murray Notes.

Bud-burst Satisfactory—Value of Cover crops: Should They be Discd or Ploughed—Early Irrigation in California.

(By Our Special Correspondent.)

Renmark, 16/9/34.

SINCE THE PRUNING has been completed, the next big event is to make a survey of the bursting of vine buds, and therefore get an idea of what the new season holds out in the form of fruitful buds and bunch counts.

Just at this date it is difficult to get a complete survey of all fruits, but the Sultanas are out sufficiently to indicate a good crop.

Indications are that a greater number of buds have burst than normally, and that the bunches are plentiful, showing a large number of fruitful buds. Although we experienced a severe frost on the night of September 2, and that many buds about the size of a pea had been destroyed, amounting in some cases to 5 to 10 per cent., it does not follow that a 5 per cent. or 10 per cent. of the lost buds indicates an equivalent loss in crop. A compensating factor arises in the circumstance of the extra buds forced out, which would otherwise remain dormant, making a more or less even balance of fruitful buds in the long run.

Then again, supposing the loss of buds by an early frost to be greater than those forced out at a later date; this also does not necessarily mean loss of crop, as on occasions the compensation of having all the energy of the vine thrown into a limited number of bunches often increases the size of bunches to such an extent that little actual loss in crop returns takes place eventually.

There are certain localities notorious as "frost pockets," usually located in a depression of stiff soil, and it has been noted that when a cover crop has been allowed to grow up higher than the top trellis wire, and still stood up when the frost occurred, the damage was slightly higher in these cases. Now that

cover crops

constitute an important part of our soil improvement, there is a tendency for growers to vie with each other in producing a crop to be proud of, often hanging on to it, after the maximum amount of good has been reached, losing sight of the fact that two possibilities might occur to neutralise the good effect of such a crop. One is that a large cover crop of voracious feeders like tick beans may dry out the soil to such an extent that it competes with the vine for soil moisture, thereby limiting the early growth of vine shoots. Another danger

lies in the possibility of frost damage through having such a large bulk of matter, which absorbs a good deal of heat during the day, and from which radiation is rapid, and causing a sudden drop in temperature at sundown, subsequently bringing about a lower temperature than in places where the cover crop has been turned in.

The question is often asked: "Which gives the best results, to

plough or disc

a cover crop?" and the position as it appears to me is this: If a cover crop is turned under, nitrification takes place through bacterial activity in a very short time, and is complete in a month or six weeks. If it is discd down, the tops act as a mulch, and is valuable in keeping the soil cool throughout the hot weather, and that nitrification of the roots will consequently take place when the tops are destroyed. However, the full value of tops will take place more as an added amount of organic matter than for its nitrifying possibilities.

In this way an appreciable amount of humus is created when favorable conditions arise, and it seems to me that it is six of one and half-dozen of the other as far as organic matter goes, but a loss of nitrogen occurs through discing. The organic matter cannot get away, and will eventually be used when incorporated with the soil.

On the night of September 4, Mr. David Case, B.Agr. Sc., gave an address on "Green Manuring and the Use of Potassic Manures" to the members of the Block E branch of the Agricultural Bureau.

Mr. Len Ashenden occupied the chair, and a very interested lot of members attended. Mr. Case outlined the gradual recovery of the fertility of European lands through the practice of green manuring, elaborating on the life cycle of the various bacteria to be found in the soil. The speaker said that the main source of fertility came from this bacterial activity, which could only be stimulated by the addition of organic matter. In expanding on the matter of photosynthesis, Mr. Case gave a striking example of the value of sunlight and its relation to plant energy; also the relationship existing between

the use of potash,

leaf efficiency, potash fixation through the wetting and drying of soils, and the value of humus in maintaining a moist

soil. In the event of land becoming excessively dry during the sugar forming period, a definite check in this process takes place.

Mr. Case cited experiments of this nature in the sugar cane fields of Queensland, and said that we might also interpret it to have the same effect on the sugar formation in our vines. That was why organic matter was so important to the soil, it prevented undue drying out, and allowed the roots to function in a normal manner for the formation of the necessary sugar-forming substances.

During the year we have also had visits from Mr. R. A. Boyle, M.Agr.Sc., Nitrogen Fertiliser Co., Mr. Guster (Adelaide Fertiliser Co.), Mr. "Bill" Murray (Vacuum Oil Co.), and the outstanding characteristic of their talks has been a direct concern for the problems of the growers. Although these scientists and technical advisers were the direct representatives of proprietary firms, they did not obtrude their wares, a fact which was appreciated by growers. These men entered wholeheartedly into marketing problems, soil improvement and such matters, which only experts in their various departments can deal with satisfactorily.

An article appearing in the "California Cultivator" is of interest to all irrigationists, as it sets the imagination going. Who were the first irrigationists of Southern California? Canals have been traced measuring 50 ft. at the bottom and 75 ft. at the top, estimated to have been the work of a civilised people more than 2,000 years ago. Excavations which were made by crude stone shovels, and the earth removed on the heads of the workers. Hundreds of miles of these canals have been traced which once irrigated thousands of acres of land.

Whence came these people and wither have they gone? Did they come from the Mediterranean through a succession of Pacific Islands, of which the Easter group ever remains a mystery, or did they come from the extreme north and were of Asiatic origin at a time when land connection between Asia and America existed? And what will be left of our irrigation areas 2,000 years hence?—"Nemo."

Indications are so far in favor of a good crop of Sultanas in the Renmark area.

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South Australian Fruit Marketing Association

THE monthly meeting of the executive of The S.A.F.M.A. was held at Adelaide on August 31. Present: Messrs. H. J. Bishop (chairman), G. A. W. Pope, A. R. Willsmore, H. N. Wicks, R. H. Charlick, R. A. Cramond, J. B. Randell, P. R. B. Searcy, F. F. Redden, M. Vickers, G. W. Selth, G. Quinn, A. G. Strickland, H. O. Knappstein, D. W. Hannaford, E. S. Mason, A. O. Peterson, and E. W. Mills (secretary). Apologies from Messrs. J. S. Hammet, T. Playford and M. G. Basey.

Fruitgrowers' Relief Act. for the distribution of the grant of £12,990 allotted to Sth. Australia for the coming season. It was resolved to recommend "that a committee be formed to advise the Government, the committee to consist of three members from the S.A.F.M.A. and one representative of the S.A. Fruit Growers' and Market Gardeners' Association, and other interests, if any."

If acceptable, S.A.F.M.A. to be committee representing, Messrs. J. B. Randell, H. N. Wicks and A. O. Peterson.

Chief Horticultural Instructor. Mr. G. Quinn introduced Mr. A. G. Strickland, who had been appointed as his successor as Chief Horticultural Instructor, and Mr. Strickland was welcomed by the chairman. Mr. Quinn advised that he would still be engaged by the department until the end of the year in compiling various records, but his outside work was completed as at August 31, 1934.

February Forecast. It was resolved that the secretary advise the Overseas Shipping Representatives' Association that the preliminary forecast for February, 1934, was as under:—25,000 cases Apples last half February, 5,000 cases Pears January 31, 10,000 cases Pears February 7, 10,000 cases Pears February 28.

A.O.T.A. Conference. Chairman advised that the A.O.T.A. conference would be held in Sydney on September 22, and it was unanimously decided to ask Mr. J. B. Mills to represent this Association at the conference. Secretary to advise Mr. E. C. Harvey, local secretary of the A.O.T.A., accordingly.

G. W. Brown. Letter received from Mr. J. B. Mills, advising that Mr. G. W. Brown was returning per R.M.S. "Ormonde," arriving at Adelaide on September 22. Decided to communicate with Mr. Brown, and ask him to address a meeting of growers that day.

Correspondence. Letter from Department of Commerce acknowledging receipt of resolution passed by shipper-members regarding export of Oranges to N.Z., and advising that the Minister

was not prepared to depart from the decision arrived at.

Letter from W.A. Fruit Growers' Association, stating they were asking their Government to distribute the 1934 bounty on an equal case basis, as a relief against freight.

Letter from Victorian Fruit Marketing Association, enclosing copy of letter written to the Prime Minister requesting provision for the compensation of growers, who have to either destroy or rework unwanted varieties of Apples. It was unanimously decided not to support the request. While members fully realised that considerable hardship might result in individual cases, they could not agree that it was a matter for compensation by the Government.

Letter from Paterson & Co. Ltd., giving extract from letter from their London office dated June 28, in regard to lack of color and quality generally of Rome Beauty Apples, and urging that steps should be taken to prevent the export of Rome Beauty and Jonathan Apples unless well colored.

Letter from Mr. J. B. Mills, advising that the opposition to the contract into which the Dairy Produce Board desired to enter with the Overseas Shipping Representatives' Association, had been withdrawn, and enclosing copies of letters in regard thereto sent to the secretary of the A.O.T.A., and the secretary of the Dairy Produce Board.

Letters from Australian Apple and Pear Export Council: Enclosing copy of letter from Department of Commerce and Consul General for the Netherlands in regard to the unrefrigerated shipment of Apples per s.s. "Aagtekerk." It was resolved that the secretary write Mr. Boardman, and ask for a true report and full details in regard to the "Aagtekerk" shipment, and to have the matter placed on the agenda for the Apple and Pear Council meeting for discussion.

Other letters from the Australian Apple and Pear Export Council dealt with Australian Apples in London, duty on Apples entering France, shipping space for fruit for Eastern ports, correspondence with New Zealand re Apple and Pear export, reduction of duty on Apples entering Belgium.

The meeting was adjourned.

The adjourned meeting of the executive of the S.A.F.M.A. was held on September 7.

Present: Messrs. H. J. Bishop (chairman), H. N. Wicks, A. O. Peterson, D. W. Hannaford, W. W. Miller, R. B. Pritchard, A. G. Strickland, F. B. James, A. R. Willsmore, P. R. B. Searcy, E. S. Mason, J. B. Randell, M. Vickers, G. Mack, and the secretary.

Grading Regulations. Letter from N.S.W. Apple and Pear Federation re suggested alterations to grades was considered and discussed at length, and it was finally decided, on the motion of Mr. Hannaford, seconded by Mr. Willsmore, "That this Association recommends that we should retain the existing grades."

Australian Apple and Pear Export Council. The preliminary agenda was considered, and it was decided to put on the agenda the following resolution:—"That having read the report from London dated April 12, 1934, this Association deplores the fact that Rome Beauty Apples were permitted to leave Australia by these early steamers."

On the question of maturity generally, it was decided to leave this matter to the discretion of delegates. The general opinion being that it was very undesirable to ship immature fruit, but difficulty frequently arose in connection with the lack of shipping space.

Limitation of Quantities, Varieties and Sizes. This matter was also left to the discretion of delegates, but it was resolved to suggest that provision should be made for experimental shipments of different varieties. It was also decided to put on the agenda for consideration at the next meeting of the research sub-committee the question of elimination of varieties, and addition of new varieties.

Cases. It was understood that South Australia was 100 per cent. in favor of the "Canadian" case.

Pear Cases. It was understood that the "Canadian" case was to be solely used during the coming season.

Rounded Edge. It was suggested that it would be a decided advantage to adopt the rounded edge for cases, to prevent sharp edges cutting fruit, and it was resolved that South Australia recommends that the adoption of the rounded edge be encouraged.

The item in regard to interdominion trading in Apples and Pears was considered, and on the motion of Mr. Searcy, seconded by Mr. Randell, it was resolved that the delegates should support the resolution on the agenda.

Delegates. Messrs. H. J. Bishop and J. B. Randell were unanimously re-appointed as delegates.

Field Day. It was resolved that the research sub-committee at the next meeting should consider the question of arranging a Field Day.

Film of Apple Industry. Mr. H. N. Wicks stated that at the request of Mr. McCann, he was engaged on producing a picture of the Apple Industry for publicity purposes. The picture would be as comprehensive as possible, from the clearing of the virgin soil to the export

of Apples at the port of shipment, and he stated any assistance that members could render would be greatly appreciated.

On behalf of members, Mr. H. N. Wicks expressed their sincere sympathy to Mr. H. J. Bishop and family in their recent sad bereavement caused by the death of Mr. Bishop's father.

HORSE AND TRACTOR IMPLEMENTS.

The Smithco Implement Co. Pty. Ltd., of Linsley-street, Box Hill (Victoria), have been manufacturing orchard and farm implements for a number of years past, these implements being noted for their strength, quality and durability. A wide range of both horse and tractor implements have been manufactured by this firm, including disc and mouldboard ploughs, road ploughs, strip ploughs, offset vineyard ploughs, one and two-way disc cultivators, tandem disc cultivators, low-clearing Citrus cultivators and attachments, spring and rigid tyne cultivators, drag harrows, scufflers, all-steel swingle bars, and other implements for the man on the land.

Attention is drawn to their advertisement appearing in this issue, also a cordial invitation is extended to all interested to visit their display at the Royal Show, Stand No. 164, Plummer-avenue, opposite the State Savings Bank.

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Western Australian Fruitgrowers' Association

ANNUAL CONFERENCE, PERTH, SEPTEMBER 12-14.

Export Grading Regulations : Extending the Local and Export Markets : Low-grade Fruit for By-products : The Fruit-fly Menace : Reworking Old Varieties.

THE annual general meeting of the West Australian Fruitgrowers' Association was held at Perth on September 12, 13 and 14, 1934, Mr. J. McN. Martin presiding.

The application from the Harvey Agricultural Society for membership, was accepted.

The chairman welcomed the Members of Parliament present and also Mr. J. S. Teasdale, President of the Primary Producers' Association.

Mr. H. Millington, M.L.A., Minister for Agriculture, officially opened the conference.

The annual report and financial statement, credit £85/8/1 were received and adopted.

Mr. Hill proposed the appointment of a select committee to investigate the present Zone System, stating that the existing boundaries were not economically based, port advantages being sacrificed to railway mileage, and that the maintenance of the present zone system would not relieve producers' costs and transport difficulties. Seconded Mr. T. Skinner, carried.

Mr. Orr proposed that a special committee be appointed to investigate the

possibility of creating and implementing a regulation to

prevent low-grade

fruit from being marketed on the local market. Seconded by Mr. Simpson and carried.

Decided to make a grant up to £10 to the Apple Sales Board for publicity. Anything further to be dealt with by Executive.

Mr. Davey proposed that agents be requested to avoid selling fruit overseas for early delivery, and thus save the shipping of immature fruit. Seconded Mr. Simpson and carried.

A sub-committee was appointed to go into the Export Grading Regulations and report back to the conference. Committee: Messrs. T. Skinner (Mt. Barker), E. Abbotts (Bridgetown), G. Parke (Donnybrook), H. Price (Eastern Hills), together with G. W. Wickens and also Mr. A. Lukis representing the Fruit Shipper's Committee.

Mr. Hill proposed that an endeavor be made to compute the average cost of producing a case of fruit and placing same on the overseas market, such estimate being necessary in any approach to the Government for assistance. Seconded by Mr. Ribe and carried.

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Mr. Wittfoht proposed that the action of the Executive Council in regard to the distribution of the Federal Bounty for 1934 be endorsed, i.e., flat rate per case exported. Seconded Mr. Sharpe—Carried.

Mr. Loaring, chairman of the Fruit Fly Advisory Board, gave a report on the formation of the Board, and Mr. H. Price also gave his report. The scale of rating orchards as recommended by the Board was adopted.

Mr. Becher proposed that all vendors of fruits be licensed. Seconded by Mr. Orr and carried.

Mr. H. Price proposed that the trustees of the Apple and Pear Export Levy Fund be requested to advance £300 to the Fruit Fly Administration Board for the purpose of employing Fruit Fly Inspectors immediately, such advance to be recouped out of collections from the Orchard Tax. Seconded by Mr. Simpson and carried.

Mr. Ozanne proposed that should the regulations proposed by the Fruit Fly Board be passed, the Executive have power to appoint a delegate to the Administration Board and recommend Mr. G. Parke. Seconded by Mr. H. Price and carried.

Conference decided to discuss ways and means of finding new overseas markets.

Mr. Kammann proposed that as there is likely to be large numbers of old varieties of Apples worked over, conference recommend to the Apple and Pear Council that they furnish a list of varieties most suitable for the export market in order of preference. Seconded by Mr. Chatley and carried.

Mr. Brindle proposed that cool storage facilities be provided on the wharves and that all fruit be pre-cooled before shipment. Seconded by Mr. Ribe and carried.

Mr. Gibb proposed that an emphatic protest be recorded against the increase in price of local cases. Seconded by Mr. Willmott and carried.

Mr. Sinclair, manager of the State Saw Mills, attended and explained the increase in the price of cases, and was cordially thanked.

The chairman made a report on a de-

putation, consisting of members of W.A. Fruitgrowers' Association, the Fruit Shippers' Committee and the Auctioneers' Association, to the Railways Department, requesting a reduction in the freight on fruit and also fruit case shooks.

Mr. Wickens made a report from the sub-committee in regard to alterations desired in the export grading regulations as follow:—

Grade Standards for Fresh Apples and Pears.

48.

(b) Apples or Pears described as "special" shall consist of sound, clean, well-formed, mature Apples or Pears of one size and one variety, free from broken skins and from disease. Fruit superficially blemished from any cause shall not be allowed to a greater extent than 10 per centum by number.

Russetting shall not be considered a blemish, provided it occurs at the stem end, is smooth, and is not visible for more than one-quarter of an inch when the Apple is placed stem down on a flat surface.

Colored Varieties of Apples:— Each Apple shall be colored to the extent of not less than 40 per cent. of its surface with color characteristic of the variety.

None of the fruit shall be less than 2½ inches in diameter.

(c) Suggested alterations in "Standard" grade.

The word "mature" to be included.

Provision to be made for colored varieties to have 10 per cent. of color.

Russetting to be included as in "Special" brand excepting that one quarter of an inch to be raised to half an inch.

Mr. Wallace proposed that the recommendations of the sub-committee on grading regulations be agreed to. Seconded by Mr. Brockman and carried.

Mr. T. G. Sounness proposed that it be a recommendation to the Fruit Fly Board to protect those districts not infected with fruit fly, and in the en-

deavor to prevent them becoming so infested. Seconded by Mr. Orr and carried.

Mr. T. G. Sounness proposed that the W.A. members of the Federal Parliament be requested to ask that the Federal bounty for fertilisers be made on a value basis, as orchardists use a smaller quantity of higher concentrated fertiliser over a less area than the farmer. Seconded by Mr. Ruhen and carried.

Mr. T. Skinner proposed that the Agricultural Department be requested to amend the regulations under the Fruit Cases Act so as to prohibit the use of secondhand fruit cases except for the carriage of Tomatoes and Grapes, and then only in restricted areas and also fruit to the goldfields. Seconded by Mr. Kammann and carried.

Mr. Brockman proposed that a letter of appreciation be sent to those cool stores who had reduced charges. Seconded by Mr. Parke and carried.

Messrs. J. Martin and G. Simpson, were elected delegates to Apple and Pear Council conference.

Office-bearers were elected as follows:—President, J. McN. Martin; Vice-President, F. E. S. Willmott; each association to elect its own representatives on the Executive Council, namely, three members from Mt. Barker and one from each other affiliated association.

Members of the Fruit Organisation Board:—Messrs. G. Parke (Donnybrook), F. E. S. Willmott (Bridgetown), H. Price (Karragullen), and A. T. Booth (Mount Barker). Special committee to investigate the possibilities of preventing low-grade fruit from being marketed:—Messrs. G. Parke, H. Price, G. Simpson and A. T. Booth, with power to add.

It was resolved to send a letter of sympathy to Mr. H. Lake in his recent illness with the hope of his complete recovery.

W.A. Council Meeting

Some Important Decisions.

SEVERAL IMPORTANT MATTERS of interest to West Australian fruitgrowers were considered at the last meeting of the Executive Council of the W.A. Fruitgrowers' Association, held at Kojonup.

Council recommended that the Australian dump case be used, with ends, tops and bottoms seasoned and dressed, but sides to be seasoned only. It was further recommended that sides may be seasoned either by the millers or by the grower, according to the latter's wish.

The stimulation of local consumption of Apples was freely discussed, and the Council agreed to urge the Apple Sales Board to conduct a publicity scheme with a view to educating the public to increase Apple consumption.

It was reported that the 1934 Federal grant was being made without any con-

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ditions, and the meeting decided to urge the Agricultural Department to arrange distribution to growers on a flat per case basis on all fruit exported overseas.

Three members, Messrs. C. H. Ozanne, G. Parke and H. Price, were appointed as representatives of the Council on the Fruit Fly Board, and they were instructed to recommend to the board that orchard registration be instituted on a permanent basis, at an annual flat rate per orchard, and that a portion of the monies so raised should be devoted for fighting Fruit Fly.

A further recommendation was made that the use of second-hand cases should be prohibited, except for the carriage of Tomatoes and Grapes when being transported within certain restricted areas, and to the goldfields; also, that no fruit from Fruit Fly districts be sent into clean districts.

The Industry in W.A.

Improvements in Local Marketing.

A perusal of the annual report of the Producers' Markets Co-operative Ltd., Perth, W.A., in which a review and commentary on market conditions between July, 1933, and June, 1934, is set out, reveals the trend of the industry in the Western State.

In general, it can be reported that both quality and packing improved in W.A. during the year ending June 30, and growers are congratulated upon submitting their fruit in an inviting condi-

tion, permitting clearance at satisfactory prices, and stimulating local consumption.

In the Citrus market there was a slight increase of production, also prices firmed slightly over the reports for the previous year, Valencias experiencing a very heavy crop, and carrying forward well into April.

The Apple market realised good values up to June, with a slight oversupply during February, which eased prices a little. On the whole, the local Apple market was satisfactory. The Pear section showed a slight improvement over 1933, both as regards volume submitted and prices realised. Stone fruits were lighter than in 1933, but mid-season varieties were steady, and returned fair prices.

Tomatoes were plentiful, and prices were better than the previous year, especially was this noticeable with the early Geraldton shipments. Metropolitan supplies were also well maintained, and returned very satisfactory values. The Tomato trade is quietly and solidly growing.

Bees and Spraying.—Mr. E. J. Watson, Assistant Entomologist, M.I.A., recently stated that if fruit trees were sprayed with arsenate of lead at the right time, namely, when the majority of blooms had fallen, they would not only obtain better control over the Codlin Moth, but the lives of the bees, which are valuable for fertilising and setting purposes, would not be endangered.

Apricot Culture.

Control of Internal Breakdown.

A complete control of what is known as internal breakdown in Apricots is scarcely practicable, writes Mr. H. P. Brown, B.Sc.Agr., Assistant Biologist, Murrumbidgee Irrigation Areas, since climatic conditions and other factors are involved, and the actual cause of the condition is unknown.

Laboratory observations indicate that it is not caused by a parasitic organism, but is generally associated with the presence of excess soil moisture. Some growers consider the condition to be Brown Rot, caused by the fungus *Sclerotinia fructicola*. This presumption is influenced by the fact that a type of mummy similar to the Brown Rot mummy is seen, but the writer reports that in his investigations of internal breakdown conditions, he only found one Apricot affected by true Brown Rot, and submits that the Apricot losses of last season were definitely not the result of Brown Rot.

Other growers ascribed the condition to the application of ammonium sulphate to the soil, but data which Mr. Brown collected in the Griffith and Leeton districts does not support this belief. In fact, the experiments which the department has been conducting for some years prove that the incidence of internal breakdown is not traceable to the ammonium treatment.

Seasonal factors and soil moisture are claimed by the writer to be the primary

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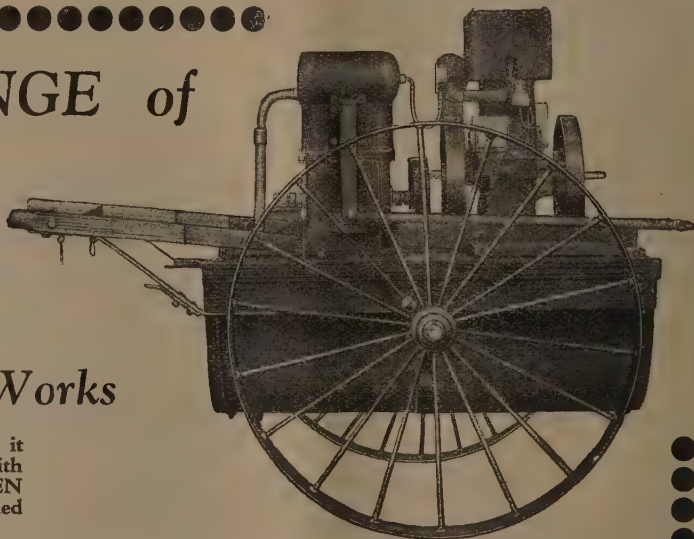
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There is a plant just to suit your needs—whether it be a Small Hand-Pump for use in connection with a Barrel or Drum—or a compact POWER DRIVEN UNIT for mounting on a Lorry, or self-contained outfit as per illustration on right.

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causes, supplemented by a lack of under drainage, and he advises the following measures to alleviate losses emanating from internal breakdown:—

1. Under irrigation; the water should be supplied only in reasonable quantities, particular care being taken just prior to the ripening of the fruit.
2. Underground drainage should be provided where possible.
3. Internal breakdown may be minimised by varying the method of pruning or by harvesting the fruit before it becomes mature. These factors, however, require some further investigation before definite statements are made, and the experiments are still being carried on.

Centenary Royal Show

Messrs. Ruston & Hornsby (Aust.) Pty. Ltd., a well known firm of British engineers, will have their exhibition of agricultural and industrial machinery at their usual Stand No. 62, Plummer-avenue. Of the engines for the farm, station and orchard, Ruston & Hornsby will have working many types to suit the varied requirements of the man on the land. There will be displayed the popular "PB" type of engine of 12 b.h.p. and upwards, which runs most economically on a variety of fuels.

A special feature this year will be the "Ruston-Hornsby" full automatic "Omnistat" controlled lighting plant, which offers something entirely original in country house electric lighting. Various sizes and types of the useful "Hornsby" mower will be on view, together with chaff cutters, grain grinders, sawbenches, milking machines and separators and irrigation plants. In heavier machinery, there will be shown working a 220 b.h.p. "Ruston" 4-cylinder vertical cold starting (lampless) airless injection, crude oil engines, which is certain to attract the attention of those requiring large power units which can be run economically on low grade fuel oils.

Marine engineers and others will be interested in the "Ruston Lister" marine engine of 14 b.h.p., which will be set out complete with reversing gear, etc. This engine is a joint product of two of the largest engineering companies in the British Empire, namely, Ruston & Hornsby Ltd., of Lincoln, England, and R. A. Lister & Co. Ltd., of Dursley, Gloucestershire.

CANADIAN APPLE CROP.

The Canadian Fruit and Vegetable Crop and Market Bulletin, issued on July 20, 1934, shows the Apple production for 1934, as 19,914,000 bushels, as compared with 25,578,000 bushels in 1933.

Orchard Implements

Fruitgrowers have expressed appreciation because of the improved mechanical services which are constantly being brought forward. In this connection, Mr. D. Harvey, Implement Manufacturer, of Box Hill, Vic., has rendered good service in his 35 years' of manufacturing implements and equipment of value to growers. These lines are favorably known throughout the Commonwealth, as well as abroad, the most recent shipment overseas being a large fruit grader equipment to Mr. J. L. Corser, Smitherfield Fruit Farm, Stratford-on-Avon, England. In his tour of the world to secure the best grader, Mr. Corser visited leading fruitgrowers and packing sheds in South Africa, Western and South Australia, Victoria, N.S.W., Tasmania, and New Zealand. After full investigation, he decided on a Harvey grader, and cabled from New Zealand accordingly.

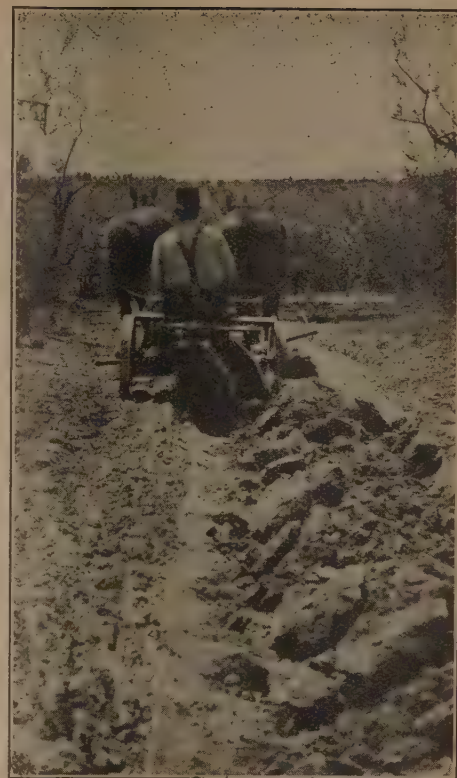
During his visit, Mr. Corser stated that a large number of the graders in use in England were an American type, grading by weight. This principle of grading fruit by weight is not efficient, as fruit grown on the side of the tree facing the sun is lighter.

Another recent overseas shipment was one of the largest model Harvey dehydrators. This was sent to the South African Dried Fruit Co. Ltd., Worcester, Capetown, South Africa, and was installed through a recommendation by a manager of a big concern in Australia, who had been a satisfied user of one of these dehydrators. The dehydrators are built to use crude oil, steam, wood, coke and briquettes.

Recently an orchard cultivator was sent to Bethania Planting Co. Ltd., Jaffa, Palestine, while other machines have been sent to U.S.A. and other countries.

An excellent Citrus cultivator is the "Beetle Back," which is specially designed to work right under the limbs up to the trunks of the Orange and Lemon trees. The "Beetle Back" will lift limbs loaded with fruit off the ground, cultivating to any predetermined depth, and then gently put back in position the fruit-bearing limbs without injuring the fruit or fibrous roots. It cuts out all weeds without clogging.

Another notable Harvey production is the "Petty" two-furrow disc orchard stripping plough, with which the orchard can be completely ploughed out in one operation. The cutting disc can be placed right underneath the frame, thereby ploughing the centre of the rows, and, when necessary, extended outside the frame allowing the land to be stripped right out between and around the trees. This machine can also be converted into a one-way reversible disc



An illustration showing the "Harvey" 2-furrow Reversible Disc Plow plowing in hard ground.

cultivator with 5, 6 or 7 plates. Also, into a spring tyne cultivator or an irrigation furrower of 2 and 3 furrows. By altering the size of the discs it is specially adapted for vineyard cultivation. In vines, the discs can be pushed through right in under the trellis, effectively ploughing out and turning over that difficult part to reach, no matter how neglected it may be, or infested with Couch or other growth.

The foregoing orchard implements are being advertised in this issue by Mr. D. Harvey, on pages 558, 559.

Visitors are cordially invited to visit his stand at the Royal Show, in Plummer-avenue, opposite entrance to the members' stand, where a full range of Harvey orchard implements will be on view.

*Growers should get into touch with
Empire Produce Exports.*

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129 PITT STREET, SYDNEY

And take advantage of their wide connection with importing firms in England, Canada and Europe.

Representatives of—Ridley & Houlding Ltd., London; Mutual Brokers, Montreal; R. & W. Davidson Ltd., London and Glasgow; Roberts Brining & Co. Ltd., London and Glasgow; Thos. Allan & Co. Ltd., Glasgow, and W. Gosley, Hull.

Answers to Correspondents

Reworking Fruit Trees. — "Reader," Warragul, writes:—If removing scions from the parent, how long should they be kept before using them for grafting purposes to get the best results. What method is used for keeping these scions fresh? If cutting the heads of a tree to prepare for strap grafting, how long should the tree be left before the scions are inserted?

Answer (by Mr. E. E. Pescott, Vic. Department of Agriculture).—The best method, apart from storage in soil, is to keep them in cool store, the ends being plunged in moist sand. Grafting should not be delayed after cutting. If any time is lost, the cut should be again cut, removing a thin layer, so as to have a fresh surface exposed. Re (1). See "Journal of Agriculture," Victoria, for October.

Prune Rust. "J.N." Young, asks for information re control of Prune Rust, also the spraying of Peach trees.

Answer (by C. G. Savage, Director of Fruit Culture, N.S.W. Dept. of Agriculture):—

Experiments which were carried out by this department during the past season for the control of Prune Rust showed that Bordeaux mixture gave better control than lime sulphur, and that the one spraying of Bordeaux mixture, 6-4-22, prior to bud burst kept the disease in check until about November. Trees which were not given a second applica-

tion of spray became affected with the fungus and the leaves fell freely, but where a second application of Bordeaux mixture, 6-4-50, was given at the beginning of November, the disease was kept well under control.

The above experiments were carried out with Peach trees, and it is realised that particularly with Peach-foilage, late spraying with Bordeaux mixture under certain climatic conditions and in some seasons, entails a definite risk of severe foliage damage, and consideration must be given to this fact. Prune tree foliage is generally regarded as being more resistant to spray injury than that of Peach trees, and it is probable that late spraying with Bordeaux mixture in conjunction with a spray prior to bud-swell will have beneficial effects from the point of view of rust control.

Further experimental work, however, is necessary before a definite statement can be made.

Increasing Local Consumption

Efficient Orchard Management and Well-Directed Publicity.

AN INTERESTING ARTICLE, entitled, The Birth of a Slogan, is to hand from Mr. G. de Vahl Davies, B.Agr.Sc., Pacific Potash Co. Ltd. A summary is as follows:—

Apples comprise nearly half the total of fruit grown in Australia. In 1931-32 9½ million bushels were produced, of which one-third were exported, and two-thirds were consumed in the Commonwealth, therefore, despite the advantages of the export trade, it is the home market that needs our immediate attention.

In round figures, it means that Australians eat 100 Apples per person per year—barely two a week. If this quantity could be increased to one Apple a day, a ridiculously low expectation, the export volume would be absorbed, or, viewed from another angle, the effect of such increased local consumption would be that for every one per cent. increase, an additional 500 acres of Apple trees could be planted without interfering with the present export trade, and without causing any glut or over-production.

The problem of small home consumption is not peculiar to Australia alone. It existed in U.S.A. long before Australian fruit production appeared to overtake the consumption requirements, but they attacked it by stimulating straight-out consumption, and by creating and developing the many varieties of by-products, particularly Apple ciders and Orange juices, that are now such a valuable means of absorbing surpluses of certain grades of fruit, with very desirable results for the orchardist.

Two important factors become the grower's responsibility before this anticipated increase in local consumption can

be experienced, namely production and quality.

In production, the so-called "luck" of which one hears so much is nothing more or less than the application of modern, scientific principles combined with assiduous attention to the trees, in short, common sense and hard work.

No matter how bad the season, the man who adopts modern methods will get a crop, good or poor dependent upon his own efficiency as a grower, but if he grows "quality" fruit he will readily sell it at a satisfactory price, for that is the kind of fruit the consuming public requires, and will pay for. In the final analysis, the volume of local consumption is controlled, increased or lessened by the quality of fruit presented for sale.

Correction.—In the article on Sulphur as a Fungicide, included in our September issue, the following should have been stated: "Dr. Cunningham states that during the past season colloidal sulphur, at a reduced strength of 2-100, gave almost complete control of powdery mildew; etc."

Wood wool for export fruit, Strawberry boxes and fruit containers may now be obtained from the Australian Berry Baskets Co., 175 Kent-street, Richmond, Victoria, whose advertisement appears in this issue. Their telephone number is J1263.

A Profitable Sideline.

Good money is to be earned in the country by the snaring of water rats. Farmers and others living near rivers, swamps or large dams will have no trouble in seeing traces of these little animals, the skins of which are much sought after by manufacturing furriers to-day. They bring high prices right through the year.

Water rats frequent old rabbit burrows. Many ways have been devised in trapping. The jam tin snare is one of the best; make a cross-cut at the top of a jam tin and press the four corners in; place a piece of meat inside the tin; the tin should then be wired and pinned to the ground. When the rat pokes its head in to get at the meat the points of the four corners which have been pressed in prevent it from withdrawing its head. The method of skinning and drying should be the same as a rabbit, that is it should be gloved. Never cut up the belly, as this method is not correct, and lowers the value of your skins. Snares may be set in the afternoon, and visited to take the catch in the early hours of the morning.

Care should be taken to see that the skins are thoroughly dried before packing for transit or storing, otherwise they may arrive in a damaged condition.

Messrs. SLATTER & CO., of Nicholas Building, Swanston Street, Melbourne, will purchase these skins in any quantity, and pay top market price. On receipt of a parcel, they grade the pelts, and forward you a cheque by return mail. This firm are also buyers of other skins, and will always be pleased to receive consignments of same from the country.

Fruit TreeS

Fruit TreeS

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Best Obtainable—Catalogue Free

**John Brunning
and Sons**

Somerville Nurseries,

**Somerville — Victoria
Australia.**

Orchards & Nurseries 208 Acres.

Private Cool Stores, 17,500 Case
Capacity.

Established 1866.

What is a Canadian Case?

THE QUESTION was asked in the last issue of the "Fruit World": What is a Canadian case? Is it a case having simply a specified internal measurement, or should the specifications as to the thickness of timber be considered?

Mr. C. H. Tutton writes as follows:— In reference to your article in the September issue of "The Fruit World": "What is a Canadian Case?" — I desire to point out that the Canadian and American Governments' specification in respect to the thickness of the sides is 5/16 in. Whilst a very large percentage of the Canadian and American pack is exported in sides of this thickness, the remainder is shipped in cases with sides bare 3/4 in., this applying where local mills are adjacent to the fruit districts and prefer to manufacture full measurement.

Respecting the tops and bottoms, Canada and America use 3/16 in.

New Zealand, whose export is 100 per cent. packed in the Canadian standard, use a specification similar to the above, which has proved in every way satisfactory.

Where Australia's requirements in cases are met by a product manufactured on the west coast of Canada, the above specification is strictly adhered to, but where supplied from another country, the sides have been manufactured 1/2 in. and the tops and bottoms 5/32 in. This lighter specification reduces considerably the strength of the case.

When Australia's requirements are met by cases manufactured here from imported Canadian timber, local millers have found it impossible to manufacture at a competitive price a specification similar to that imported from Canada and, as a consequence, have offered the best case possible for the price which, unfortunately, has sides 9/32 in. and tops 5/32 in. It is not the local manufacturers' desire to supply any lighter case than that used by other countries, but as they are unable to secure the extra price necessary for the full specification, they can only offer the lighter case on a competitive basis.

The numerous occasions that our fruit is handled in transit prior to absorption make it imperative for us to use a sufficiently stout case to carry the fruit in good order and condition.

The recommendations of the Apple and Pear Council that the case should be constructed with ends a minimum thickness of 3/4 in., sides minimum thickness 5/16 in., and tops and bottoms minimum thickness 3/16 in. have, we understand, the approval of the Minis-

ter of Commerce and will shortly be adopted in the regulations governing export. Government inspectors should be instructed to see that these minimum thicknesses of timber are complied with, as fruit despatched in sides less than 5/16 in. is liable to excessive bruising on account of the side not being rigid. All stacking is, or should be, on the side and, therefore, rigidity is essential. Many cases that left Australia last year had a bulge on the top, bottom, and sides which is to be deplored when viewed from the standpoint of the excessive bruising which must have taken place, and consequent reduction in sale values.

I note the reference to Kentucky and Batlow, N.S.W., in your article. I have been informed that Kentucky used cases with sides 5/16 in., and that Batlow, whilst they last year used sides 3/4 in., are hopeful of using next season sides of similar thickness to those used by other packers.

If all growers and exporters will adopt the minimum thickness recommended by the Apple and Pear Council and use sufficient nails, i.e., 48 1 1/2 x 14 (cement coated or spiral nails preferred) instead of 32 as at present, the case would be more than sufficiently strong to withstand the normal handlings in transport — 12 nails fastening each side to the end, 12 nails fastening the tops to the end, and a similar quantity for the bottoms. Numerous tests have proved that eight nails are insufficient and the use of 12 is recommended by the Council for Scientific and Industrial Research.

Messrs. C. H. Miller Pty. Ltd., Melbourne, write as follows, under date, August 27:—

Canadian Shaped Cases.

The correct specification of the Canadian standard case is given in the bulletin, "Packing Apples and Pears," drawn up by the Department of Agriculture, as follows:—

Ends—Two pieces 11 1/2 inches long, 10 1/2 in. wide, 3/4 in. thick.

Sides—Four pieces 19 1/2 in. long, 5 1/2 in. wide, 3/4 or 5/16 in. thick.

Tops and bottoms.—Four pieces 19 1/2 in. long, 5 1/2 in. wide, 3/16 in. thick.

Cleats—Four pieces 11 1/2 in. long, 3/4 in. wide, 3/4 in. thick.

[Tops are also cut 1/2 in. longer to allow for the bulge.]

One important fact that they omit is the quality of the timber. All the timber, and in particular, the end pieces, should be dried down to a moisture content of approximately 12 per cent. If there is much more moisture than this

the timber shrinks and warps very considerably under the conditions of the Australian summer. If the timber is dried much below this moisture content it is very apt to crack and fracture, as it is liable to become too brittle. Case timber should be free from knots on all nailing edges, and should have no large dead knots of any kind. You will realise that you cannot drive the nails into knots, and if a large dead knot drops out, probably the Apples inside will be damaged.

It is sometimes the practice of sawmillers to quote a nominal thickness of the boards. This is very misleading, and is often the cause of fragile and unsuitable cases being supplied. Growers and packing sheds should insist that the specifications offered by sawmillers show distinctly finished measurements of the timber they propose to supply. This applies particularly to ends and sides.

The end piece should be not one fraction under 3/4 in. (in America most of the ends are 13/16 in.), as, with anything thinner than this, a slight error in nailing immediately starts a split in the timber, and naturally the case breaks up with 40 lbs. of fruit tightly packed into it.

Another practice with sawmillers very often is to pare down the thickness of the sides to save a little timber. When, however, you realise that the cases are all stowed on their sides up to 10 or 12 in height, you will realise the amount of pressure that has to be carried by the side pieces of the box. The side pieces should not be under 5/16 in. thick.

In addition to this, the horizontal dunnage rests on the side boards, and therefore tends to depress it with the weight of the boxes on top. These side pieces also have to carry the weight of trays of Apples as they are lowered into the ship's hold.

The cleats should be 3/4 in. wide and 5/16 in. thick, and no less in either direction. We have often seen a cleat much lighter than this, which is split hopelessly directly the nails have been driven into it.

If the packing-sheds will remember that the loss of labor, fruit and other charges in only two broken cases out of every one hundred amount to far more than the extra cost of a good box, they will realise the importance of having a proper specification rather than a fragile package, often supplied at a fraction of a penny less.

Classified Advertisements

WANTED TO SELL.

INTERNATIONAL HARVESTER ENGINE.—1 1/2 h.p., in good order, suitable for spray pump, etc. Price £10/10/-. George F. Hill, Spring Park Orchard, Warragul.

One DEHYDRATOR (Clyde Engineering). Reasonable price. Apply, Cawsey's Cordials Ltd., Murray Street, Pyrmont, N.S.W.

Apple Export Case.

Canadian and Special Dumps Compared.

During the 1934 export season, tests were conducted by several orchardists, in conjunction with the Council for Scientific and Industrial Research, regarding the relative merits of the "9-inch" dump and the Canadian case for Apple export.

At the August meeting of the executive of the Victorian Fruit Marketing Association, Mr. J. W. Bailey presented the following report, prepared by Mr. H. G. Colombie:—

"Port Fairy," London: On taking the net proceeds of each account sales, and dividing each by the number of cases accounted for in regard to proceeds, viz., 132 dumps and 130 Canadians, the average per case works out as follows:—5/6½ for the dumps, and 5/9½ for the Canadians.

However, this is not quite a fair test, because you will notice that some 27 dumps were sold on June 1 on a market which, judging from the preceding results, obtained on May 30, was slightly lower, and I think a bird's-eye view is more easily obtained by setting out the two account sales, as follows:—

Dumps.

May 30th—

245's	7/9
228	7/9
193	7/9
175	7/6
156	6/9
144	6/6

June 1st—

210	7/-
156	6/3

Canadians.

May 30th—

216's	8/3
234's	8/3
198	8/-
180	7/6
163	7/3
125	6/6
138	6/6
150	6/6

You will notice from the above that the Canadians sold at slightly more money than the dumps, by comparing the counts that more or less correspond to one another.

For instance, the 216's and 234's of the Canadians sold at 8/3, as against the 228's in the dumps, which sold at 7/9; which also applies to the 245's in the dumps.

The Canadians 198's sold at 8/-, against the 193's in the dumps at 7/9.

The Canadians 180's and the 175's of the dump sold at the same price, viz., 7/6.

The other counts are more difficult to judge, but in this case again it can be said that the price is slightly better for the Canadians against the dump.

I am drawing no comparison with the dumps sold on June 1, because it would not be quite fair to do so.

I have also taken the trouble of going through the fruit sold for Mr. Webb. I have no account sales, and my figures are only taken from the catalogue, and in his case the Canadian was sold at an average of 7/7 gross (that is, without deduction of selling expenses), as against 7/2 for the dumps, and a similar table is also interesting. All this fruit was sold on May 30:—

Dump.

210's	at 8/-
193's	at 7/9
175's	at 7/3
156's	at 7/-
132's	at 6/-

Canadian.

216's	at 8/-
198's	at 8/-
180's	at 7/6
163's	at 7/6
150's	at 7/-
138's	at 7/-
125's	at 6/6

The average of 5d. extra for the Canadians is, strictly speaking, not quite accurate, and the comparative tables are, in my opinion, the best guide. The reason why the average is not reliable is, that if you take, for instance, the 23 cases of (193) dumps sold at 7/9 and the corresponding 62 Canadians 198's at 8/-, the improvement in the average is, of course, calculated on the 62 cases Canadian, whereas it should only be calculated on 23 cases.

As Mr. Webb's parcel is a better straight-out example, I give you hereunder another table of comparative quantities with the corresponding figures:—

Dumps.

210	16 at 8/-	£6 8 0
193	23 at 7/9	8 18 3
175	26 at 7/3	9 8 6
156	28 at 7/-	9 16 0
132	19 at 6/-	5 14 0

112 £40 4 9

Average 7/2.

Canadians.

216	16 at 8/-	£6 8 0
198	23 at 8/-	9 4 0
180/163	26 at 7/6	9 15 0
150/138	28 at 7/-	9 16 0
125	19 at 6/6	6 3 6

112 £41 6 6

Average 7/4½

From this it appears that the Canadian then gives about 2½d. per case extra.

In Preparing Your Bordeaux Sprays Use . . .

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The Right Material for Plant Disease Prevention and Control
GUARANTEED 99% PURITY

GRADES—Mixed Crystals, Fines, Granulated (Snow), Packed in Suitable Containers for Growers' Requirements.

Agents for All States: **ELDER SMITH & COMPANY LIMITED**, All Capital Cities.

BOOKLET—"Better Yields by Spraying with E S A Bluestone" obtainable on application to Elder Smith & Company Ltd.

Motor Cars and Trucks

Useful Hints

IN RESPONSE to requests from many readers, we propose the inclusion of this new section each month as a further service that we are privileged to extend to the fruit-growing industry. As far as practicable, we will publish hints and advice upon the care and effectiveness of cars, trucks, tractors, motor and oil-engines, mechanical equipment usually associated with orchard management and such other information as will assist growers to keep their machinery of every sort functioning to a maximum efficiency.

More and more the primary producer is replacing horse transportation and manual labor by mechanical equipment of all sorts, and although we are fast becoming motor minded there are still many problems that arise in the use of machinery, the solving of which may well be eased by the pooling of our combined knowledge.

This then, will be the function of this section. It will attempt to assist the less experienced motorist and engineer and to be as little technical as possible in the many matters of interest with which it will deal from time to time.

Watch Your Plugs.

The spark plug is one of the most common causes of engine trouble on the road, although attention to it is probably the least technical of any of the many recurring troubles. Indications of plug trouble include misfiring of individual plugs, showing that that particular plug is dirty or fouled. The engine misfires when hot or when a special pulling strain is put on it or when there is a backfire in the carburettor, suggesting that the points are badly burned. The engine misfiring when accelerated quickly resulting from too wide a space in the points. The remedy is compara-

tively simple. Remove the plug, look for cracked or broken insulators, see if the points are correctly spaced according to the gauge required in that particular make of car or truck, scrape off any carbon on the inside of the plug and wash the plug and the points with petrol.

The mica or insulated portion should not be rubbed with any abrasive material such as emery paper, but with a cloth dipped in petrol. An old toothbrush dipped in petrol will be found to make a good cleaner.

Tyres.

It is surprising what risks some drivers take with worn tyres. Next to engine efficiency there is nothing about a truck so important as road-worthy tyres. If good bitumen roads only are traversed it might be a fair economic risk to run on tyres showing a minimum of fabric, but it is not worth the risk on rough metal roads. Some drivers rely on re-treaded tyres, whilst others claim that it pays to invest in entirely new tyres. This, of course, is dependent upon the wear that the tyres have had and the state of the cord fabric. If unbroken and unperished, the fabric on a well-used tyre will certainly stand re-treading. Many factors enter into the mileage life of a tyre. The state of the roads, the speed usually maintained, the efficiency of the driver, the loads carried, wheel alignment and the pressure of air ordinarily given, all of which considerations reflect upon the wear and tear of the tyres. Possibly the most important consideration is the maintenance of the correct pressure and the pressure gauge should be constantly used. Insufficient air in one tyre will not only cause bending of the cover, but will cause hard steering and throw a greater

strain on the whole of the car or truck. These things are so obvious that it is surprising that so many drivers neglect them until some trouble actually arises, when out on the road, from increased tread wear and a waste of mileage.

Periodical inspection and tightening up of nuts on the wheels is good advice as loose bearings will cause a tyre to wear unevenly, as will also the wrong alignment of a wheel. Front wheels should be as nearly as possible parallel, although a toe-in of 3/16 inch is generally permissible. Should a tyre be cut, a good type-filling compound should be applied, after the cut is well cleaned out, to keep dirt and moisture out of the cord casing.

When fitting new tyres, remember that although they seem to be fully inflated when first put on, they will require more air after they have run say two hundred miles as the tyre "gives" a little and thus reduces the pressure. Trust the gauge rather than the eye. A new tyre will feel hard even when it is actually under-inflated.

The Steering Gear.

With the improvements that are being made in all phases of automobile construction, "shimmy-ing" as we knew it in the early days is fast becoming past history, and the steering gear has received a deal of attention by motor engineers and manufacturers as fool-proof mechanism has been evolved. Even so there are attentions constantly necessary if our cars and trucks are to give their maximum service. One important duty of the driver is to look after the lubrication of his steering gear, not only the steering box but also all the grease points between the box and the front wheels. On general principles, too much grease or oil is better than too little.

If, as is so often seen, the truck is left out in all sorts of weather and is driven through mud and grit on the roads, dirt gets into these joints and is liable to cause wear and consequent slackness with decreased safety. Slackness may result in wheel wobble, which is not only annoying to the driver, but is a strain upon the engine and creates greater wear on the tyres.

If excessive play is noticed in the steering gear, the drag link and tie rods should be inspected, adjusted regularly and, if wear is noticed, the ball joints should be replaced. Slackness in the steering box should be checked by in-

M. V. POINT MOTORS (AUST.) PTY. LTD.

FOR BETTER USED CARS AND TRUCKS AT LOWER PRICES.

This House absolutely GUARANTEES every Car and Truck to be in excellent running order. Prices are extremely low, and represent the highest value obtainable. Easy terms to suit YOUR convenience will be arranged with pleasure. If you want a good reliable Used

Car or Truck see M.V. Point Motors First.

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Phone: F 4104.
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Opposite
a'Beckett Street.

specting the end play in the steering worm, which may be rectified by adjusting the large nut on top of the box or by removing the shims from the bottom plate. To take out end play from the sector shaft, remove the shim from the side plate or adjust the thrust pin, if such is provided. If play is found between the steering sector and the worm, it can be regulated by the adjustment of the steering flange on the eccentric bush of the sector shaft.

It is commonly done, but is unwise to turn the front wheels by forcing the steering wheel round when the car is at rest. When the car is moving there is little strain, but if the movement is forced it may result in a bent link or cross-tie rod.

General Notes.

Although many jobs can be done at home or on the road, dependent always upon the common sense of the driver, major repairs should be entrusted to the garage man, who should be an expert in motor engineering and who has so many tools more than are found in the kit of the average car or truck owner. It is the simple running repairs that an ingenious driver can himself do that we aim to describe.

Sometimes the cost in time and the unsatisfactoriness of a half-done repair job proves much more expensive than if it were given to the expert to effect, and although a wealth of experience and knowledge is gained by pottering around the car, common sense, as in so many other problems that confront the primary producer, should be the guiding principle.

Keep a special watch over the tail light, especially during the wet weather, as shorts and broken wires often cause trouble. Test your lights in the daytime. It is much more easy to adjust slight errors in the daylight than in

the dark. It may mean the margin between safety and sorrow or even prevent trouble with the traffic police.

The first radio set installed in a car was reported only four years ago, yet so popular has this equipment become that some car manufacturers are already including the wiring for radio in the making of cars. America reports that there are already one million cars now fitted with radio sets.

Lights usually fail from some simple cause, watch your ammeter and see if the dynamo is charging. If it is not registering while the charging switch is on and no lights are burning, the dynamo is failing to charge and the reason should be investigated at once. It may be broken wires, the fuse may be blown, the battery terminals may be corroded, the battery flat or need some water. Look for the simplest explanation first.

Question Department.

We invite questions from readers upon any mechanical problems they may encounter, either in the running of cars and trucks or relating to mechanical equipment and implements that they may be using. We will do our best to give practical advice upon all questions submitted. Replies will be forwarded direct to enquirers and also published in these columns for the information of other readers who may be interested in the points raised.

MOTOR NOTES.

CARS should be greased after travelling 500 miles.

When squeaks develop in the springs it is often due to water and dirt between the springs. To remove rust open up leaves and inject kero-

sene. Squeaks may also be caused by loose spring grips. When rattles in springs are caused by overmuch side movement between shackle pins and spring eyes the nut on the shackle bolt should be tightened, but do not clamp too tightly, as the restriction of free action is liable to cause the upper leaf to break.

When door hinges wear and rattle, remove pins and bend them slightly before replacing. This may make the door stiff at first, but it will remove the rattle.

With a new car, observe carefully the instructions not to do any speeding until after doing at least 500 miles: in fact, it is better to go at low speed for 1,000 miles.

Too often we hear cars laboring up hills in top gear—because the driver wants to see how far the engine will go without changing. This puts a strain on the engine. Get into lower gears as soon as the engine starts laboring and thus pounding its bearings.

Where a door is ratling, look to the screws: or possibly there is a lack of oil on the door locking parts.

To start an engine when it is cold, leave the ignition "off," and while still in neutral, press the foot on the gear lever: at the same time open up the throttle. Then put the foot on the self-starter. This distributes the gas among the cylinders. A few revolutions will suffice. Wait a moment, then repeat. Next, take foot off gear lever, still keeping gears in neutral. Switch on ignition. Touch the self-starter with the foot, and the engine should start running sweetly.

When approaching a steep decline be ready to get into second gear before the car gets under way too rapidly. It is better on some very steep declivities to come down in first gear. Safety first.

CUT OUT AND MAIL

Any Instructions referring to this Order must be given in writing.

To the Proprietors of—

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Over 30 Years' Service to Fruitgrowers.

78a Victoria Street, Melbourne

439 Kent Street, Sydney

Please enter my/our name on your Subscribers' List and send me/us the Journal regularly as published, for which I/we agree to pay Subscription 6/- per annum (or 7/6 including "Fruit World Annual") and continue same until countermanded.

Dated

THE ... Market Grower

Value of Lime

-*-*-

News of Interest

Official Organ of the Market Gardeners and Fruitgrowers Society of Victoria.

President: E. A. Le Page.

Vice President: Cr. A. Bunny.

Committee: G. Ryan, C. James, C. Baker, L. Lawrence, J. Hawkes, J. Stocks.

Arbitration Committee: H. V. Barnett, W. Simmonds, E. A. Le Page, H. Besant, W. D.

Barnett. Secretary: Cr. C. C. A. George, Highett Road, Moorabbin, Vic.

The Value of Lime

Its Use in the Garden

LIME fulfils many functions which are essential to soil fertility. Its most useful action is in neutralising the acidity of strongly acid soils, for with the removal of acidity the other valuable effects of liming follow. Lime improves the physical condition of heavy acid soils, ensuring better drainage and aeration, and making cultivation easier, and is an essential plant nutrient, and when present in sufficient amount promotes many phases of bacterial activity, especially those ultimately bringing the reserves of nitrogenous material in the soil into the soluble forms of nitrogen which plants utilise.

There is no foundation for the common statement that exposure of acid soil to sun and air "sweetens" or reduces its acidity. Acidity is developed through an insufficiency of lime in the original soil-forming material, or by the loss of lime, through leaching, and absorption by plants. Acidity thus developed can only be counteracted in field or garden practice by the use of some form of lime. The forms of lime used for counteracting soil acidity are hydrated or slaked lime, and ground limestone or carbonate of lime.

Slaked lime is formed by the action of water on burnt or stone lime, and forms a very fine powder, which can be effi-

ciently spread. Ground limestone is a cheaper and more pleasant material to handle than slaked lime, and can nearly always be relied on to give as quick and good results as slaked lime, provided the material is sufficiently fine and well distributed, and that equivalent dressings are applied. In the last respect, 4 lb. of carbonate of lime are required to supply as much "effective" lime as 3 lb. of slaked lime contains.

Quantity to Apply.

The soil to be limed should be dug over and reduced to good tilth, the lime uniformly spread, and then lightly worked into the top several inches of soil. The amount of lime to be used depends on the degree of acidity of the soil, its texture, organic matter content, and the type of plant to be grown. Unless all these features can be determined suggestions on the amount of lime that it is necessary to add to a soil can only be approximate. In those parts of N.S.W. (states the N.S.W. Department of Agriculture) where the rainfall totals over 30 inches per annum, soils which have not been influenced by limestone formations can be assumed to be moderately to strongly acid.

On loams and heavier soils, dressings may range from 1 lb. of slaked lime, or 1½ lb. ground limestone per square yard, on loams, to double these quantities on clay loams and clays. Sandy loams or still more sandy soils can receive lighter dressings of approximately half the amount for loams. Lime is lost most rapidly from sandy soils, which are usually more acid than heavier soils under the same conditions. Under garden conditions, with frequent waterings, lime is continually being lost, especially from the sandier types of soil. After the initial liming, which may need to be heavy to counteract strong acidity, it is preferable to add light dressings each season, rather than occasional heavy dressings.

Acidity Tolerance of Plants.

It is not always necessary to add sufficient lime to completely neutralise soil acidity, as most garden plants grow well on slightly acid soils. This slightly acid condition will only result in the majority of garden soils after liming. Only for those plants listed below as very sensitive to acidity is it advisable to completely neutralise acidity. Whilst many plants grow best on neutral soils or on slightly alkaline (opposite of acid) soils, a considerable number of plants will tolerate fairly acid soils. The latter are not adversely affected by being grown in limed soils, though many plants which require a good lime supply may fail on acid soils.

By careful planning of the garden cropping scheme, portion of the area may be set apart and only lightly limed, if at all, for certain plants (as indicated below), and the remainder limed for those crops with a higher lime requirement. Potatoes, which will grow on acid soils, do best on slightly acid soils, and in gardens where dry conditions are not experienced the danger from scab diseases in slightly acid soils is small.

The following statement shows the relative sensitiveness of a number of garden and crop plants to acid soil conditions:—

Very Tolerant.—Parsley, Potato, Radish, Strawberry, Sweet Potato, Tomato, Cowpea, Maize, Millet, Oats, Rye.

Tolerant.—Bean, Brussels Sprouts, Carrot, Choko, Cucumber, Endive, Kohl Rabi, Pea, Pumpkin, Rhubarb, Squash,

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Turnip, Watermelon, Crimson Clover, Vetch.

Sensitive.—Broccoli, Cabbage, Cauliflower, Eggplant, Sweet Corn, Barley, Rape, Red Clover, Sweet Clover, Wheat, White Clover.

Very Sensitive.—Asparagus, Beet, Celery, Lettuce, Onion, Parsnip, Spinach, Lucerne.

Overliming.

Evidence is available to show that excess of lime under certain conditions may depress plant growth. Overliming may result when the calculated amount of lime is applied to the surface zones of soil, and not worked to the proper depth. Overliming injury is produced only on heavily-limed acid soils, and not on non-acid soils, or soils which have previously been limed. This injury is not permanent, and is usually overcome by the time the first crop is removed. Lettuce and Lucerne are crops which may suffer from bad lime distribution.

Large additions of organic matter, such as compost, manure, etc., are very effective in reducing overliming injury, and this fact is of importance in indicating that a liberal addition of green or stable manure should be applied to the soil if immediate liming and seeding are necessary. Where very heavy dressings of lime are necessary, it may be advisable to apply the lime in two successive seasonal applications. After the preliminary liming, the lime added in a well-made compost will go far to counteract natural losses of lime from the soil.

TOMATO CULTURE.

FERTILISER AND VARIETY trials with Tomatoes were recently conducted by the Dept. of Agric. on the property of Mr. D. Dawson, of Kangaroo Flat, near Bendigo, Vic. Owing to the incidence of disease the fertiliser trials were inconclusive, but the variety trial revealed the good bearing and disease resisting qualities of a number of leading Tomato varieties, while two strains, Large Red and Pale-Leaf were outstanding for high yield and disease resistance.

Spotted wilt has been very destructive. Tests in 1930-31 showed that staked and

unstaked plants yielded equally well; in 1931-32 the unstaked plants gave a significantly higher total yield than the staked plants.

Tests show that arsenical spraying or dusting if done thoroughly, give a good measure of control over the Tomato grub.

In 1930-31 there were no significant differences in yield or earliness between staked and unstaked plots, whereas in 1931-32 the staked plants were significantly lower yielding of both early and total fruit under Bendigo conditions.

The black dot disease is troublesome at Bendigo. The sterilisation of the seed bed soil is recommended and the planting of none but vigorous healthy seedlings.

With regard to blossom end rot, it was noted that irregular irrigation increased this trouble and reduced the total yield.

AUSTRALIAN ONIONS FOR CANADA.

THE RECENT REPORT of Mr. L. R. Macgregor, Australian Trade Commissioner in Canada, upon the importation of Australian Onions by Canada, reminds us that this once large trade has dwindled during recent years. Whereas Canada paid us £12,000 for Onions in 1922, the average shipments over the past four years have only been in the region of £400 per annum.

Canada is forced to import Onions, especially during May and June of each year, and her main supplies come from U.S.A., Egypt, New Zealand, Chile and Bermuda, but Australian Onions, if landed during those months, would receive a welcome.

The prospects of a heavy crop and the unremunerative prices forecast for this past season, decided certain exporters to again exploit the Canadian market, with very satisfactory results, which suggested that the market could be recaptured if proper steps were taken to supply the grade wanted at the right time.

The two main factors to be remembered are that the Onions shall be of good keeping quality and be graded and packed with due allowance for shrinkage. The Department of Commerce also points out that care should be taken that no more than one shipment shall arrive at the same time, and that conditions of stowage on board ship shall be satisfactory, so that the Onions land in such condition as to incite the interest of the buyers, and compare favorably with those submitted by other countries.

The Market Gardeners' and Fruit-growers' Society of Victoria, in conjunction with the Moorabbin Shire Council, is preparing a "float" for the forthcoming Floral Pageant on October 25. The float will show vegetables, fruit and the products of the shire.

REDUCED WATER RATES DESIRED.

At the monthly meeting of the Victorian Flower Growers' Association, at Burwood, on September 4, there were also present Mr. W. A. Thiele, representing the Southern Fruitgrowers' Association, and Messrs. C. H. Isaac and W. O. Baines (Nurserymen and Seedsmen's Association). An apology was received from the Market Gardeners' Society, with an intimation that they were wholeheartedly behind the move to secure lower water rates.

Mr. W. Smith (President of the Flower Growers' Association) occupied the chair.

The urgent necessity for obtaining lower water rates was stressed.

It was felt that any direct approach to the Metropolitan Board of Works would not serve any useful purpose, and it was therefore decided to approach local members of Parliament with the idea of having a joint petition prepared to secure a Bill enabling the Metropolitan Board to charge differential rates, in particular lower rates for primary producers, who use the water in large quantities.

Stage Manager: "You received a tremendous ovation. They're still clapping. What did you say?"

Actor: "I told them I would not go on with my act until they quieted down."

New Dwarf French Bean

ONCE "ACME" ALWAYS
SOWN GROWN

FIVE GOOD REASONS WHY YOU
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1. Much earlier than other types.
2. Exceptionally prolific.
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4. Produces a perfect long green Bean, ensuring TOP market prices.
5. Covers 60 per cent. more sowing space than equal quantity of Canadian Wonder.

2/6 PACKET.

Prices for Large Quantities Posted on Application.

ONE OF MANY TESTIMONIALS:

Dear Sir,—Regarding the trial carried out this midsummer with your Acme Bean. I am pleased to be able to inform you that the Acme showed out to even greater advantage than in the spring trial, when the yield over Canadian Wonder was just 3 to 1 on the first picking.

Planted early in December, with Pale Dunn and Canadian Wonder, in rows 45 feet long, the Acme gave 12 lbs. of splendid quality pods on the first pick, while the other two varieties named each gave 3 a lb. of curled, unmarketable Beans. This may sound fabulous, but it is nevertheless a fact. It is difficult to raise Beans here in the midsummer. The Acme is easily the best summer Bean I have yet tried.

Yours faithfully, M.C.G.

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Finest Quality Fruit Trees and Fruit Tree Stocks available. Strong, healthy, well-grown, true to name, prolific bearers all climates.

Expert Packing and Prompt Despatch to any Address

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Picnic Point Nurseries, Balrnsdale, Victoria.

VICTORIA.

Geelong.—There was heavy blossoming of the Apricot, Peach and Plum trees: indications favor a heavy crop.

Around Inverleigh, high-quality vegetables are being grown. At a recent show conducted by the Vegetable Growers' Association, splendid samples of Asparagus were on view. There is now a considerable acreage under Asparagus in this district.

WOOLLY APHIS PARASITE.

Mr. O. Belcher, of Emu, Victoria, was in Melbourne during September, when he called on the Government Plant Pathologist, Mr. R. T. M. Pescott.

Specimens of the Codlin Moth parasite, observed by Mr. Belcher, are being examined, and a report will be presented in due course.

DEAF AND DUMB.

The committee of management of the Victorian Deaf and Dumb Institution (for children), St. Kilda-road, Melbourne, wish to thank readers who have contributed to the funds. By the kind help of all, this year, over 130 children have had the advantage of a home and training, which have brought health and happiness to their lives, and, on leaving school, they can be expected to prove themselves useful and industrious citizens.

The work is commended to any person wishing to help children. If you are interested in any way, kindly communicate with Mr. W. J. McCaskill, Superintendent and Secretary, at the institution. Your help in making this Centenary year the brightest the children have yet experienced will be greatly appreciated.

MORE LAND FOR FRUIT IN ENGLAND.

A recent report published by the Ministry of Agriculture in England discloses that the acreage under fruit trees increased last year by 6,200 acres, showing an increase over 1933 of 1,100 acres of small fruits and 5,100 under orchards. The area now reported covers 254,700 acres of orchards and 61,100 acres of small fruits. The largest increase is reported in Kent, Essex and Worcester for orchard land, and in Norfolk for small fruits.

Nine hundred more acres have been planted with hops, bringing the area under cultivation to 17,800 acres.

Port of London Authority.—The Sydney office of the Port of London Authority will, as from October 5, be located at Frazer House, 22 Loftus-street.

CONTROL OF BLUE MOULD OF TOBACCO.

Destruction of Crop Remains by June 30.

DURING THE PAST SEASON the most widespread outbreak of blue mould disease of tobacco in the history of the industry occurred, and practically the whole of the tobacco crop in New South Wales was destroyed. With the intention of preventing, as far as possible, the spread of this disease, a proclamation under the N.S.W. Plant Diseases Act has been issued which requires that every owner and occupier of land on which there is growing on the 31st day of May, in any year, any tobacco plants, shall, not later than the 30th day of June next following, uproot and effectively destroy by burning each such plant.

That correct combative measures result in crops free from the disease, even in a season particularly favorable to the disease, as was the last, has been demonstrated at Bathurst, N.S.W., Experiment Farm, where disease-free crops have been harvested for a number of years. The manager of the farm considers that the destruction of tobacco plant remains from the previous crops, together with the destruction of volunteer plants, has aided considerably in controlling infection.

NATIONAL BANK, MELBOURNE.

Visitors in Melbourne should not miss the opportunity of inspecting the tall, stately building which occupies the site of 271-279 Collins-street. This imposing structure, towering gracefully above the surrounding buildings, is the headquarters of a large progressive Australian banking institution—The National Bank of Australasia Ltd. The premises are constructed on modern lines, facilitating the work of the bank, and providing ample conveniences for clients and others.

Here the bank conducts a special department, named "The Woman's Bank," which consists of a department on the ground floor, apart from the general banking departments, designed for the use of women clients. It includes a comfortable lounge room, and information on banking and allied subjects is available from an experienced woman officer.

For the convenience of people travelling in Australia and overseas, the bank has organised a Travel Service Department, which is situated in the banking chamber. All information and services required by tourists and travellers are made available by the department.

An invitation is extended by the management to visitors to inspect the interior of the building, including the impressive strong rooms and the impregnable safe deposit. Any visitor who

wishes to ensure the safety of special valuables has the option of short-term or annual rentals, and of bulk storage or individual safes.

Experimental Orchard Needed

The importance of the fruit industry fully warrants the establishment of an experimental orchard. The Government already has a suitable site at Tatura, the development of which as an experimental orchard would be of immense value to the industry in the Goulburn Valley.

It is true, of course, that the Government has many calls on its resources. Here, however, is one outstanding case in which expenditure would be justified. It would yield tangible results in improving the State's assets.

The work could include—for fruit trees—tests with stocks, varieties, irrigation, manuring, pruning, etc. In addition, new activities could be tested—vegetable and flower culture, seed-growing. Such an experimental orchard could be a rallying point for the activities of the district. It would prove a much-needed stimulus to effort.

The formation in the Goulburn Valley of an "Experimental Orchard Committee" is suggested to keep this project continuously before the Government, the growers and the general public.

"FRUIT WORLD" APPRECIATED IN W.A.

(The Editor, "Fruit World.")

Enclosed please find cheque, being payment for "Fruit World" subscription. I would like to express my high appreciation of the interest your paper has always taken in matters on our behalf. Starting in a small way many years ago, I have watched with pleasure the growth of the "Fruit World," and to-day it is a publication that does you great credit.

As a fruitgrower, I wish to thank you, and wish your paper every prosperity.

Yours sincerely,
(Signed) A. CULLEN.

Bridgetown.

Jones: "Brown says that one of his daughters has M.A. attached to her name."

Smith: "Quite right. Her name is Mary Ann Brown."

Magistrate: "Have you ever done anyone a good turn in your life?"

Prisoner: "Yes, Your Worship, I've kept about four detectives in regular employment on and off for twenty years."

HE GOT A RISE.

Teacher: "Can anyone give me a sentence with 'attack' and 'heroes' in it?"

Small Pupil: "A man sat on a tack, and he rose quickly."



City Fruit Markets Sydney N.S.W.

F. Chilton, Established 1894.
Fruit Commission Agent,
Licensed Under Farm Produce Agents' Act.
Highest Market Prices, Prompt Returns, Reliable
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FRUITGROWERS!

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Wing, R. A., & Co., Wholesale Fruit Market.
Wing, Young & Co., Wholesale Fruit Market.
Woolf, G., Wholesale Fruit Market.
Wholesale Fruit Merchants' Assn., J. D. Fraser, Temple Court, 428 Collins Street, Melbourne.
Young, J. H., & Co. Pty., Wholesale Fruit Market.

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Poupart, T. J., Ltd., Covent Garden.
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Manchester:

The Port of Manchester Rep., W. J. Wade, 8 Bridge Street, Sydney.

Bremen:

GERMANY.

Fruchthandel, Gesellschaft.

Hamburg:

Asthelmer, P. H., & Son, Fruchthof.
Gustav Bey, Hamburg.
Int. Fruit Import Gesellschaft.
Luiten, J. H., & Sohn, Hamburg.
Stier, Aug., Fruchthof.
Timm & Gerstenkorn.

The Victorian Fruit Marketing Association.

THE monthly meeting of the Executive of the V.F.M.A. was held at Melbourne on September 28, Mr. A. S. Harrison presiding. There were also present: Messrs. G. W. Brown, F. R. Mellor, W. H. Carne, J. B. Mills, J. W. Barker, C. J. Parnham, W. P. Hutchinson, W. A. Webb, J. W. Bailey, G. Douglas, F. Moore, W. A. Thiele, E. I. Lawford, J. J. Tully, F. Cave and the Secretary, R. E. Boardman. Apology received from Mr. K. Eagle.

Members stood in silence in respect of the memory of the late Mr. E. Pritchard and Mr. V. Petty (son of Mr. Frank Petty, Mitcham).

The chairman extended a cordial welcome home to the President, Mr. G. W. Brown.

Country Inspection. — Mr. Barker urged that all fruit for export be inspected in country districts, otherwise growers were put to the expense of rail-age and charges where fruit which should have been stopped at country stations was finally rejected at the wharf.

Mr. Bailey and Mr. Carne told of their method of assisting the inspector, by providing transport, enabling him to visit orchards and packing sheds.

On the motion of Messrs. Barker and Bailey it was decided:—

"That the Department of Agriculture be urged to extend the inspection of fruit for export at country stations and orchards in co-operation with country associations with the object of making such country inspection 100 per cent."

A Committee of three was appointed to confer with the Department of Agriculture on this subject:—Messrs. Bailey, Moore and Barker.

Thrips Investigation League.—It was decided that delegates of the V.F.M.A. be instructed to make every effort to secure a substantial grant from the Apple & Pear Export Council to the Thrips Investigation League.

Swedish Tariff. — Mr. Brown referred to the rise in the Swedish Tariff on Apples on May 1. The market could

absorb 200,000 cases in regulated deliveries, preferably direct. There was cool storage space in Stockholm for 35,000 cases. Sweden was friendly to British peoples and desired mutual trade. It was decided to instruct delegates to press for the extension of the period of low tariff in Sweden to as late in June as possible. Motion Messrs. Mills and Barker.

Case Specification.—Decided to recommend, on the motion of Messrs. Mills and Carne, that ends be $\frac{3}{8}$ in., sides 5/16 in.

Maturity of Apples.—Mr. Ward stated experiments were being carried out by Mr. Tindale, of the Government Cool Stores; brownheart had been induced at certain temperatures; tests revealed that the temperature for carrying Apples picked early would not be safe for Apples at a different stage of maturity. The report would be shortly available when tests under commercial conditions could be made.

Apple Varieties for Export. — Mr. Brown stated that Australia's action in voluntarily reducing varieties was highly appreciated abroad, and he urged that the present list be not extended. Further, Mr. Brown said that Australia's



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action had been followed by Canada, and their list of 166 varieties would be cut by 50 per cent. New Zealand had 53 varieties for export, and U.S.A. 12.

After a discussion on the subject of compensation to growers who would suffer losses in reworking, it was decided to refer the subject to the Australian Apple and Pear Export Council with a view to considering a method by which the industry could assist to establish a compensation fund. It was recommended that the following varieties be placed on the "Danger List" for subsequent deletion from the export list.—Aromatic, Gravenstein, Geeveston Fanny, King Pippin, Pomme de Neige, Mobbs Codlin and Crow Egg. Decided to recommend the inclusion of the variety King Cole.

Pear Committee. — Mr. Harrison reported the following recommendations of the Pear Committee: (1) Grade designations to be altered thus: standard to be "extra fancy" and "plain" as "fancy"; (2) only two cases to be permitted export to U.K. and Continent, viz.: standard Pear case and the long bushel; (3) only seasoned hardwood or softwood cases to be exported, plus compulsory use of strawboard or woodwool on all sides, tops and bottoms; (4) no deletion of varieties for export; (5) that a delegate from Pear growers attend Sydney Conference in an advisory capacity.

Delegates to Conference. — Grower members elected Messrs. Brown and Hutchinson to be grower delegates at the Sydney Conference, Mr. Brown to be member of Executive; shipper members elected Messrs. Mills and Harrison, Mr. Mills to be Executive member. It was decided on the motion of Messrs. Mellor and Barker to adopt the recommendation of the Pear Committee that a representative of the Pear growers be sent to the Sydney Conference in an advisory capacity. The motion was carried and Mr. F. Moore was appointed.

Apple Export Grading Regulations. — Decided to agree that the grade designations: extra fancy and fancy, be adopted, these to include color grading, but no lowering of the present standards.

VICTORIAN FRUIT MARKETING ASSOCIATION.

THE ANNUAL MEETING of the V.F.M.A. was held at the Board Room, C.T.A., Melbourne, on September 28. Mr. A. S. Harrison presided over a large attendance.

Arsenic on Apples.—In reply to a question, Mr. Brown stated Americans were washing their Apples in a solution of hydrochloric acid. While the British Health Authorities maintained their present attitude regarding the tolerance allowed, Australia would have to face the situation.

Federal Government Grant. — Messrs. Harvey, Fuller, S. Brown, and others, spoke strongly in opposition to the method adopted for the disbursement of the Federal Grant: i.e. flat rate per case. They contended growers should have been given an opportunity to discuss this matter before the decision of the Executive.

Mr. Mills stated that the matter had been debated at length by the Executive meeting. Another method for the distribution of the Grant (which he had personally advocated) was discussed, but it was finally decided to agree to the flat rate per case system. In company with Mr. Tully, he had put this view before the Department.

Mr. Harvey moved: "That in future the Executive take great care in consulting local associations on any important matter affecting the growers."

Mr. T. Fuller seconded.

Further explanations were given in which Mr. Bailey said that it was impossible in the instance under review, to give notice to growers, as the matter came before the Executive for prompt decision. In future, copies of the preliminary agenda paper would be before the Executive members seven days before the meeting.

Mr. Thiele moved an amendment in favor of the payment of the grant on a flat rate being confirmed.

It was decided to withdraw both the motion and the amendment.

Election of Officers.—The Secretary announced that it had been necessary for an election in one district only, namely:—Metropolitan. A poll had been taken and Messrs. J. J. Tully and Frank Moore had been elected. Congratulations were extended and Messrs. Moore and Tully replied.

The chairman expressed warm thanks and appreciation for the services of Messrs. E. I. Lawford and W. A. Webb. A vote of thanks was carried.

Alteration to Constitution. — The Secretary reported that final adjustments to the constitution were being made by the Association's solicitors and copies would be mailed to every member with the recommendation that on the poll being taken in three months time the growers' vote for the adoption of the new constitution.

Mr. Brown's Report.—Mr. Brown gave a resume of his experiences abroad, and the calling of the Empire Producers' Conference, at which he had been asked to preside. The following were dealt with:—Arrangements with Canada to reduce varieties; a programme for seasonal periods for Empire fruit producers on the British market. It was necessary to view matters from an Empire viewpoint as the whole of the supplies of Apples for Great Britain could come from within the Empire. Strides had been made with gas storage, fruit going out better than when in ordinary cold storage. It was necessary for Australia to tighten standards, to regulate the arrivals and to work in close harmony with the British producers.

Mr. Brown spoke favorably of the stock research at East Malling and manuring experiments at Long Ashton. There was need for a continued Australian representation in the United Kingdom. In answer to a question, Mr. Brown stated that counts were definitely preferred to sizes, but not counts in dump cases.

Mr. Brown was cordially thanked for his address.

Office-bearers. — Office-bearers for 1934-35 elected were: President, Mr. G. W. Brown (unopposed); Executive — Growers: Messrs. G. Douglas and K.

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Eagle (Harcourt); J. W. Bailey and W. H. Carne (Gippsland); C. H. Jost (Western); W. P. Hutchinson (Peninsula); J. J. Tully and F. Moore (Metropolitan). Shippers — Messrs. A. S. Harrison, J. B. Mills, F. R. Mellor, F. Cave, C. J. Parnham and J. W. Barker.

WELCOME HOME TO G. W. BROWN.

A welcome home dinner was tendered by the Victorian Fruit Marketing Association to its President, Mr. Geoffrey W. Brown, on Friday, September 28. Mr. A. S. Harrison presided. The proceedings were cordial, and highly appreciated. Apologies for absence were read from the Prime Minister (Mr. Lyons), the Minister for Commerce (Mr. Stewart), Mr. C. A.

S. Hawker and Col. Harrison, M's.H.R., the Premier of Victoria, Sir Stanley Argyle, the Speaker of the State House (Mr. Everard, M.L.A.), Mr. G. H. Knox, M.L.A., and others. Several congratulatory telegrams from growers were read.

Mr. J. B. Mills, President Australian Apple and Pear Export Council, in a happy speech, proposed the toast, Federal and State Parliaments, which was responded to by Mr. J. V. Fairbairn, M.H.R. Mr. Harrison proposed the toast "Our Guest," stating that Mr. Brown's services were of a constructive character. Mr. J. H. Lang spoke appreciatively in support.

Mr. Brown, who was received with prolonged applause, gave a summary of the proceedings of the Empire Producers' Conference, and outlined the stages neces-

sary to stabilise the Australian Apple and Pear Export industry.

Mr. C. J. Parnham proposed the toast, The Overseas Shipping Representatives' Association, and urged reduction of freight on fruit. Mr. Brennan, chairman O.S.R.A., and Mr. W. H. Swanton replied.

Mr. W. A. Webb proposed the toast of the Department of Commerce. In responding, Mr. E. J. Mulvaney said that in his 45 years' experience he had never heard a more constructive address than that delivered by Mr. Brown. It was a classic, and he congratulated Australian fruitgrowers on their choice of a delegate.

A hearty vote of thanks to the chairman was honored at the instance of Mr. Mulvaney.



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CANADIAN APPLES RECEIVE A WELCOME IN EGYPT AND PALESTINE.

According to figures recently released by the Canadian Trade Commissioner, Canada has become the largest supplier of Apples to Egypt. During the 1932-33 season Egypt imported 160,708 cases of Apples; but the 1933-34 season ended with 190,000 cases having been received, in spite of slightly less favorable economic conditions having been reported. The two most popular varieties proved to be Newtowns and Winesaps, 60 per cent. of the former and 15 per cent. of the latter being included in the total importations. Rome Beauties were faulted for their poorer color and keeping qualities, but a few trial shipments of Canadian Delicious were favorably reported upon. It is found that boxed Apples open up more satisfactorily than those shipped in barrels. Egyptian trade prefers 3 and 3½-inch Apples, which are clean and bright, and have good keeping qualities.

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In this connection it is interesting to note that whereas Australian shipments to Egypt in 1932-33 season were valued at only £1,000, the past season's shipments were valued at £4,500, and received very eulogistic comments from Egyptian buyers.

The Palestine trade requires a smaller Apple than is desired in Egypt, and the demand for boxed fruit is growing. Most of her imports come now from Turkey and Italy, with a slight re-export trade from Egypt, which comprises many varieties from several quarters. In 1931 Australia sent one trial shipment, but this market has not yet been properly exploited, and offers an opportunity for further investigation into a prospective market for a good class of small, rich-colored, good-carrying varieties.

Clergyman (engaging gardener): "Have you any religious views?"

Gardener: "No, sir; but I've got some snapshots I took at Manly last year."

APPLE AND PEAR PRICES IN ENGLAND.

A STATEMENT was recently compiled by the Horticultural Division of the Victorian Dept. of Agriculture, showing prices received for Victorian fruit on the British market. The list of Apples showed 80 varieties, Pears 45 varieties. Full details are available to any enquirer. The list hereunder is heavily reduced.

Apple Prices.

Average prices at auction for Victorian Apples in England, for six years: 1926, 1928, 1929, 1930, 1931 and 1932:—

Variety.	Price.
Alfriston	11/11
Adams Pearmain	9/9
Cleopatra	11/6
Cox's Orange Pippin	11/7
Crofton	8/-
Champion	9/2
Dunn's	10/10
Duke of Clarence	10/-
Delicious	9/6
Dougherty	10/2
Democrat	10/5
Esopus Spitzenberg	10/5
Edna May	8/11
French Crab	9/5
Gravenstein	9/9
Granny Smith	13/10
Hover	9/-
Jonathan	10/-
London Pippin	10/2
Lord Wolseley	9/9
Melon's Seedling	7/10
McIntosh Red	9/-
Newtown Pippin	11/3
Nickajack	9/6
Pomme de Neige	10/-
Reinette du Canada	9/5
Rymer	9/1
Ribston Pippin	9/7
Rome Beauty	9/9
Red Rome	9/11
Rokewood	10/-
Stewart's Seedling	9/9
Shoreland Queen	9/9
Scarlet Nonpareil	9/7
Statesman	9/3
Sturmer Pippin	10/5
Stone Pippin	10/4
Schroeder	11/3
Wellington Pippin	10/4
Worcester Pearmain	9/7
Winesap	8/1
Yates	8/2
Yapeen Seedling	9/4

Note.—Some of the abovementioned varieties were shipped in small quantities, and the prices are not a true indication of the quality of such varieties. Cox's Orange Pippin, for example, averaged 11/7 per case over a period of six years, yet it is not a good commercial Apple to grow in Victoria.

Pear Prices.

Average prices for Victorian Pears in England for six years: 1926, 1928, 1929, 1930, 1931 and 1932:—

Variety.	Price.
Beurre Anjou	15/8
Beurre Bosc	14/9
Beurre Diel	13/11
Beurre Hardy	13/1
Doyenne Boussock	10/-
Doyenne de Comice	15/5
Duchess	16/6
Elizabeth Cole	13/6
Giblin's Seedling	10/-
Clou Morceau	11/9
Howell	11/11
Josephine	15/3
Keiffer	11/2
Lawrence	10/6
Marie Louise	11/6
Madam Cole	11/9
Packham's Triumph	13/2
Passans de Portugal	12/3
Winter Nelis	16/5
Winter Cole	13/8
Williams Bon Chretien	7/3

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NEW SOUTH WALES.

Sydney (24/9/34).—The Market Representative of the Fruitgrowers' Federation of N.S.W. reports as follows: Apples, Crofton, 5/- to 9/-; Del., 12/- to 14/-; Demo., 4/- to 9/-; French Crab, 4/- to 7/6; G. Smith, 5/- to 12/-, few higher; R. Beauty, 4/- to 9/-; Scarlet Pearmain, 3/- to 7/-; Sturmer Pippin, 2/- to 5/6; Yates (Vic.), 6/- to 10/-; Pears: Glou Morceau, 3/- to 4/- half; Jos., 6/- to 11/-; Packham's T., 6/- to 10/-; W. Cole, 7/- to 10/6; W. Nelis, 5/- to 10/-. Bananas (N.S.W. and Q'ld.) —7/- to 15/- trop. case, few higher; Fiji, 8/- to 15/-; Norfolk Is., to 8/-. Citrus: Grapefruit, N.S.W. local, 4/- to 7/- bush; Inland, 4/- to 7/-; Lemons, N.S.W. local, 2/- to 4/-, few higher, Navels, N.S.W., 3/- to 5/- bush; Vals., 2/- to 4/6, few special order shipping lines to 6/6; Mandarins, N.S.W. Emperor, 2/6 to 4/6 bush. Loquats, Mammoth, 5/- to 9/- half bush; small, 2/- to 4/-;

small supplies of this fruit are arriving. Passionfruit, N.S.W., 8/- to 10/- half bush.; inferior, 5/- to 7/-; special, 11/- to 14/-. Supplies continue light. Papaws, 7/- to 9/- trop. case; Pineapples, Q'ld. Queen, 8/- to 12/- trop. case; Tomatoes, Q'ld. Bowen, 6/- to 15/- half bush; N.S.W. glasshouse, 12/- to 18/- half bush.; W.A., 4/- to 6/- half bush.

Comments on the Citrus Position.—
Grapefruit: Supplies are easier. **Lemons:** Factory operations have ceased, and the marketing of coarse, large, or inferior fruit cannot be expected to return marketing cost. **Navels:** Supplies are heavy again to-day, and prices slightly easier. Most fruit is showing quick breakdown and quick sale is necessary. Large sizes predominate, and Valencia and other varieties are being sold as the halfpenny Orange. **Mandarins:** Overmatured fruit now much in evidence. **Valencias:** Arrivals are increasing, fruit being small in size.

VICTORIA.

Melbourne (29/9/34). — Fruit sales were slow and prices remained unchanged. Quotations (excepting where otherwise stated, the quotations are at a bushel case):—Apples—Eating, Del. 4/- to 8/-, few to 9/-, Jons. 3/6 to 7/6, Statesman, 4/- to 8/-, Yates, 3/6 to 6/6, R. Beauty 3/6 to 7/6, others from 2/6; cooking, Granny Smith 5/- to 8/-, Five Crowns 4/- to 7/6, Stewarts 2/6 to 6/6, others from 3/6. Oranges—Navel, average standards, 75-84 4/6, 96-112 5/-, 126-140 5/6 to 6/-; selected wrapped Mildura and Sth. Aust. standards, best counts, 9/- to 10/-; a few special brands higher; selected unwrapped Mildura and Sth. Aust. standards, 7/- to 8/6; Poormans, 6/- to 7/-; Commons, from 4/-. Lemons—Average standards, 4/- to 5/-, a few 6/-; small, from 3/-. Grapefruit—Good standards, best counts, 60-75 5/- to 6/-, a few 7/-; specially selected 8/- to 10/-; few special wrapped

lines higher; large, from 4/-. Mandarins—N.S.W. Emperors, best counts 5/- to 6/-, a few specials 7/-; few special red varieties higher; Mediterranean Sweets 5/- to 7/-. Papaws, 7/- to 9/- a double case; green and inferior lines, lower. Pears—Culinary, 2/6 to 8/-; few specials higher; desert, 2/6 to 8/-, few specials higher. Bananas, Q'ld (green)—6's 8/- to 9/-, 7's 10/- to 11/-, 8's and 9's 12/- to 13/- double case, few specials higher; inferior lines, lower. Pineapples, 8/- to 11/-; few specials, 12/- double case. Passionfruit, 8/- to 15/- half-case. Tomatoes—Sth. Aust., 15/- to 17/- half-case; W.A., 8/- to 10/-, few specials higher a half-case; Vic., 12/- to 14/- half-case. Cucumbers, 12/- to 14/-. Celery—Adelaide, 10/- to 12/- double case; few specials higher.

Melbourne, 30/9/34.—During September, supplies of all fruit lines were well maintained, but the demand was generally easier than during August.

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Bananas eased towards the end of the month, and keeping quality suffered. Greens 8's and 9's 11/- to 14/-, 7's 9/- to 12/-, 6's 7/- to 9/-. Apples, eating 4/- to 6/6, selected to 8/-, cooking 3/- to 6/-. Grannies were the most sought after, and averaged 8/-. Celery: Adelaide opened up 7/- to 9/-, and rose to 10/- to 13/- at end of the month. Grapefruit 4/- to 10/-, with a few marks slightly higher. Lemons, small 3/-, average standards 4/- to 5/-. Mandarins: N.S.W., 3/- to 5/-; Victorian, 4/- to 7/-. Oranges: Navels, average standards 3/6 to 5/-, selected standards 6/- to 8/-, specially selected wrapped to 10/-, Commons 4/- to 5/-. Tomatoes: W.A. early lots arrived in poor condition, requiring heavy repacking and much loss, realising 7/- to 9/-, later shipments 9/- to 11/-; Sth. Aust., heavy supplies, brought 15/- to 16/-.

QUEENSLAND.

Brisbane (18/9/34).—Mr. Wm. Robson, fruit merchant, Brisbane, reports as follows, on September 18:—All choice lines of fruit are selling freely at present. Choice colored Apples such as Democrats, Yates, Crofton, etc., are realising up to 9/6. Sturmers are selling at 7/- with choice lines realising slightly higher. Choice green Crabs are maintaining firm rates at 8/-; those showing any color are practically un-

saleable. Granny Smiths are now in firm demand, those free of blemishes are selling freely at 13/6.

All local citrus sales are now at much more satisfactory figures, choice Navels selling to 8/-, Jaffas to 6/- and Commons to 5/-. Glen Mandarins realising high prices, choice quality selling to 13/-, Scarlets and Emperors to 10/-.

Pear sales are very firm, Victorian Josephines selling to 14/-.

All vegetable sales are only maintaining moderate prices. Beans selling to 7/- per 30 lb. bag, peas 4/6 per bag and cabbages 3/- per dozen, our local cauliflower season is now just about finished.

Brisbane (28/9/34).—Bananas, cases. —Cavendish. Traveston, FJS 8/- to 5/6; West Burleigh, TS 8/- and 7/-, WJK 5/6 and 4/6; Closeburn EJM 7/6 to 4/-; PI 7/3 to 4/6, P 6/9 to 4/6, XI 6/- to 4/-; Dayboro, D 6/6 and 5/-, WR 5/- and 4/3; Eumundi, SD 6/- to 4/3; Cunumbin, RS 6/- to 4/-; Miva, TR 5/9 to 4/-; Samsonvale, KD 5/6 to 4/-; JG 5/6 and 4/-; Mooloolah, JB 5/6 to 4/-; AS 4/3 and 4/-; Boompan, SR 5/3 and 4/-; Theebine, WC 5/3; Pomona, H & R 4/9; D'Aguilar, WGBH 4/9 and 4/3; Landsborough SFG 4/6 and 4/-; Palmwoods BB 4/-. Other Fruits: Pineapples, smooth leaf, cases 2/6 to 5/6, few at 6/-, rough leaf 5/- to 7/-; Lemons 3/- to 5/- case, Southern 3/- to 7/-; Oranges 2/- to 5/-, few special 6/-; Benyenda Val.

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Correspondence is invited by the Association.

J. D. FRASER, Secretary, 21 Wholesale Fruit Market,
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5/6 to 7/-, Navels 5/- to 9/-, odd special to 10/-; Mandarins, local Glens 7/- to 12/-, few large 14/-, Emperor 5/- to 9/-, special large 10/-, Scarlet 4/- to 9/-, special higher, others 4/- to 9/-; Grapefruit 3/- to 5/-; Passionfruit 10/- to 15/-; Papaws 6d. to 2/- bushel case; special 2/6; Yarrow repacked 7/- to 8/- one and a half bush. case. Imported Fruit: Apples, Jon. 4/- to 10/-, GS 10/- to 12/-, SPM 5/- to 8/-; STP 3/- to 7/-, ARO 5/- to 8/-, Dem. 6/- to 9/-, FC 3/- to 9/-, RB 7/- to 9/- NYP 5/- to 9/-, GF 5/- to 7/-; Pears, WC 9/- to 12/-, few to 14/-, WN 9/- to 12/6, Jos. 11/- to 14/-.

SOUTH AUSTRALIA.

Adelaide (26/9/34).—Apples (eating), 5/- to 8/- case; Apples (cooking), 5/- to 6/-; Bananas (Q'ld.), 16/- to 19/- case; Lemons, 5/-; Oranges (Common), 3/- to 3/6; Oranges (Blood), 4/-; Oranges (Navel), 6/- to 7/-; Oranges (Poorman), 3/- case; Pears (eating), 8/-; Pineapples, 12/- case.

WESTERN AUSTRALIA.

Perth (21/9/34).—Fruit: Fair supplies of all lines were to hand, prime qualities meeting a ready demand. Apples (dumps): G. Smith, prime 9/- to 11/- (others from 6/-), Dunn's, prime to 8/-; Cleo., to 9/6 (others, pitted, from 3/-); Yates, prime to 9/6 (others from 6/-); small and inferior from 4/-; Nickajacks to 6/6, Demos. to 6/6, R. Beauties to 7/6, Statesman to 7/-, cookers (flats) 4/- to 6/6, colored (flats) 3/- to 5/6. Citrus: Navels, dumps, prime, to 10/6; good 6/- to 8/- (others from 4/-); flats to 7/- (others from 2/-); Oranges, dumps to 7/-; flats 2/6 to 5/-; Mandarins, prime to 10/6; others from 3/-; Lemons 1/- to 4/-. Other Fruit: Lo-

quats, special to 12/6; No. 1's to 8/6 (others from 2/-); Tomatoes special to 15/-; No. 1's to 12/6 (others from 3/6); half cases 3/- to 9/6.

FRUIT EXPORTS TO DENMARK.

Messrs. L. Paulsen & Co., Copenhagen, Denmark, write as follows on July 31, 1934:—

"Concerning the fruit trade at this end,—due to the restrictions in force here, the import of fresh fruit has now been cut down to 25 per cent. of the import to this country during 1931. It is to be hoped that these restrictions will not be further sharpened, because, if so, the export from Australia to Denmark will be reduced considerably next season."

The Port of Hull. — We acknowledge having received from Burns Philp & Co., Sydney, representatives of the London & N.E. Railway, the well illustrated Port of Hull Annual, a brochure entitled Holiday Guide to N.E. England, and a special Hull edition of the "Manchester Guardian." Much valued information is given concerning the importance of Hull as a port.

Harcourt. — Useful rains fell during September. Stone fruits blossomed well, and look like producing good crops. Apple trees coming on nicely. Preparations have been made for frost protection in the danger zone. Many growers intend using chemical bands as an aid to Codlin control. Cool-stored Apples are moving freely to country districts and Interstate markets at fair prices. Interest has been created in the proposals to standardise Apples under the Victoria Mark, and carry on an advertising campaign.

Pear Export.—Thiele's Fireside Fruits is an organisation to put up a uniform pack for shipping Pears abroad. At the annual meeting of the Association in September, Mr. W. A. Thiele presiding, the annual report revealed a satisfactory year. Good prices were received for all varieties, including Beurre Bosc, Josephine, Winter Nelis, Williams Bon Chretien; small quantities of Doyenne du Comice received particularly high prices.

The association has a colored printed label, indicating "Fireside" brand and printed wrapper. In future, this label will only be used for selected varieties which are most sought after by the British trade.

Great appreciation was expressed by members for the efficient handling of the fruit in London by Messrs. Dennis & Cooper, and for the shipping arrangements at this end. In a letter to the organisation, Messrs. Dennis & Cooper stated that "Fireside" brand was well received by buyers. The pack was uniformly good. The continuance of the use of the long bushel case was recommended.

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